SEPTEMBER 1, 1958

STEEL
The Metalworking Weekly

A PENTON PUBLICATION

Costs: How Comparison Helps

Trade association plan aids expense cutting *Page 29*

Tester Reveals Pipe Defects

Eddy current unit finds flaw 0.0005 in. wide *Page 62*

Extrusion Handles Hard Alloys

Impact method shapes 80,000 psi material *Page 64*

Steel Sheets Start Comeback

Automotive demand is key to full recovery *Page 85*

SUB BECOMING AUTO ISSUE?

UAW talks pensions, but auto people prefer to change unemployment benefits if they renegotiate contracts . . . Page 27

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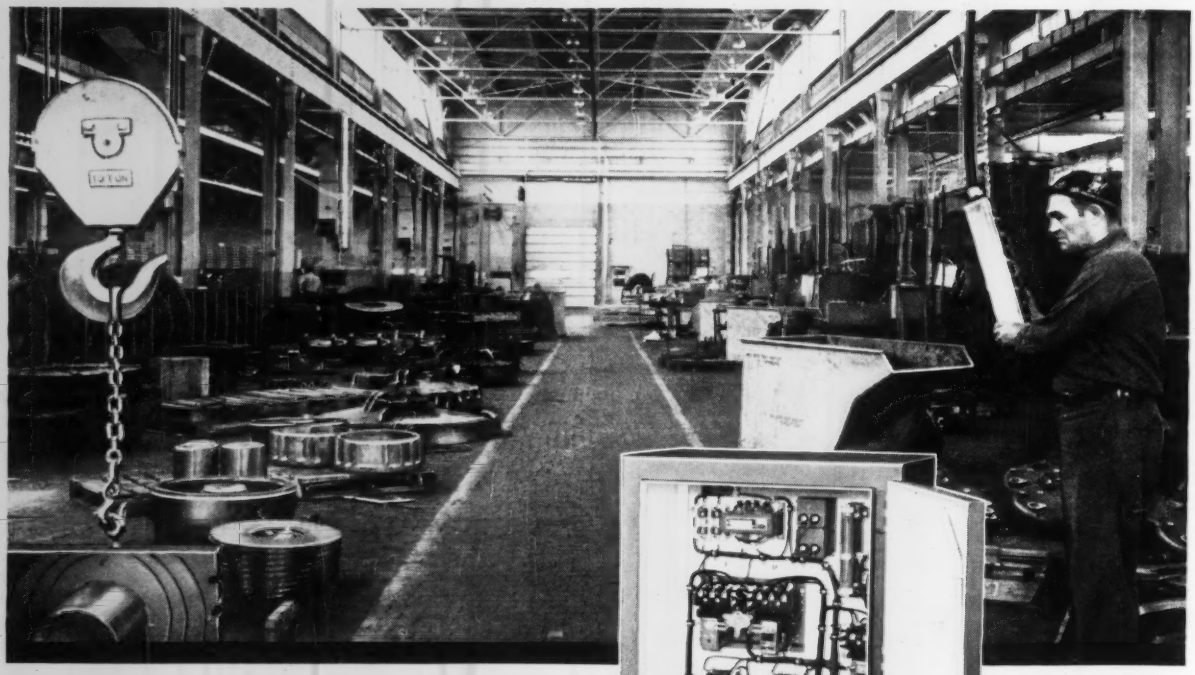
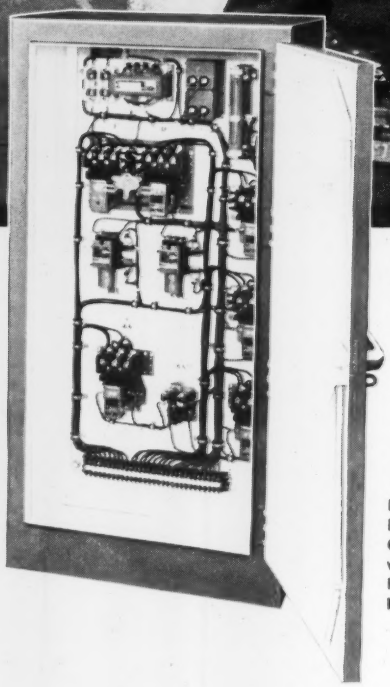


new

EC&M

"VL" AC CRANE CONTROL

for light industrial* crane service



Form VLRP Reversing Controller with Frequency Plugging Relay

• Designed specifically for light industrial AC cranes, EC&M's full magnetic "VL" control assures smoother, more efficient operation than manual control. On cab-operated cranes, operators have greater freedom of movement with small masters mounted up-front and controllers at rear of cab. "VL" control is also available for cranes operated from floor by pendant push-button master.

EC&M "VL" Controllers are compact and have vertical-action type contactors. The well-known EC&M Frequency Relay provides accurate control of accelerating operations on Dynamic Lowering hoists. Timed acceleration is provided for Reversing hoist, Bridge or Trolley controllers. "VL" controllers have "individual protection," eliminating the need for separate protective panel. They are front-connected and wired for easy inspection and maintenance.

A companion line to EC&M's "PT" Control for DC cranes, this new "VL" control is far superior to manual control previously specified purely on the basis of price.

**NEMA Service Classification II applications*

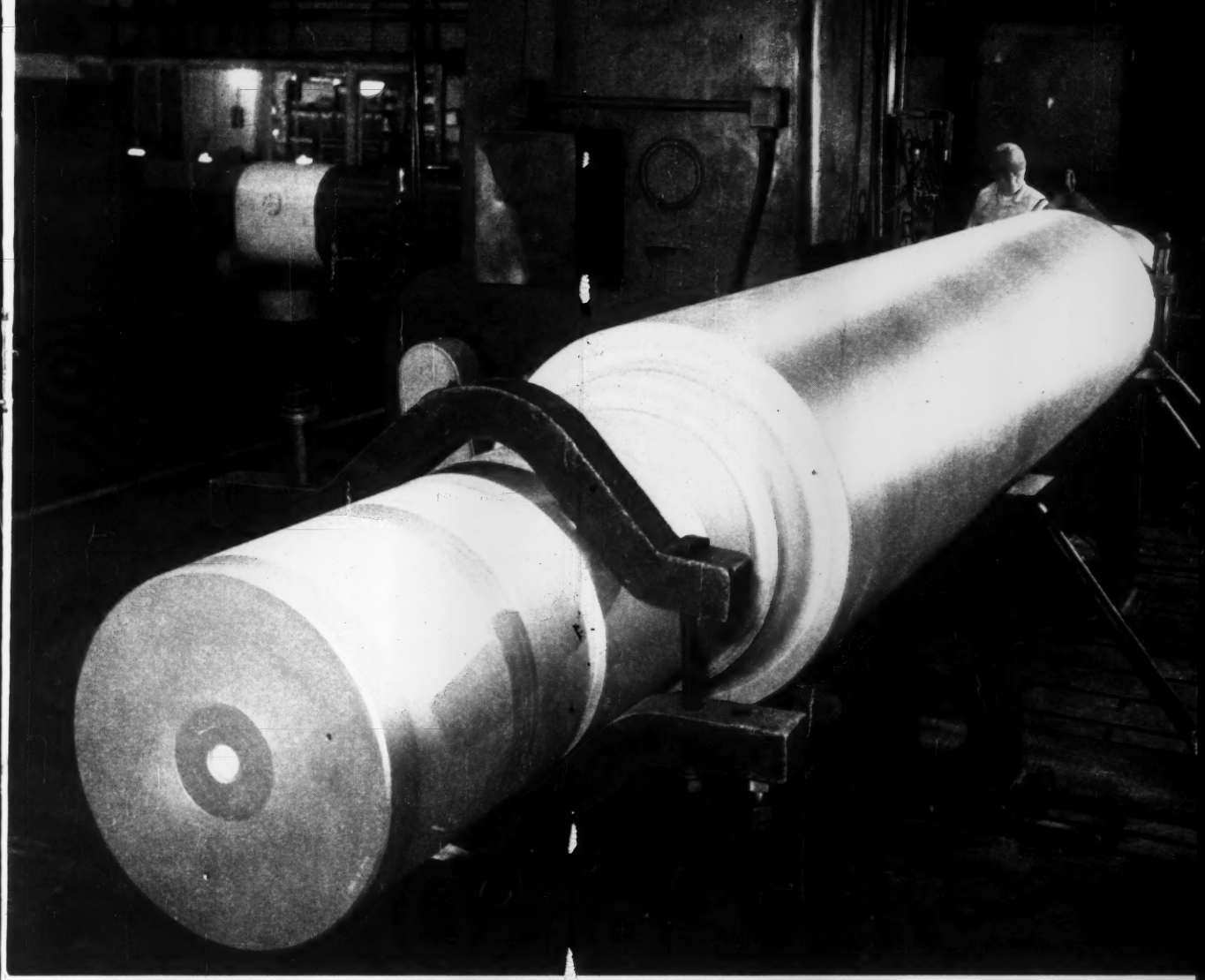
Write for Bulletin 6431 for complete details

THE ELECTRIC CONTROLLER & MFG. CO.

A DIVISION OF THE SQUARE D COMPANY

CLEVELAND 28 • OHIO

1587



Keyway milling prior to finish-grinding.

It sets a new record

This isn't the largest forging ever to come from the Bethlehem shops. But it *is* the largest forged work-roll we've ever produced for rolling of metals.

Its weight is a record 34 tons. And its length is even greater than the photo might indicate. From end to end the roll measures just about 24 ft. It has a working face of approximately 14 ft and a body diameter of 38 in. When finished and installed, it will be used for rolling aluminum plate and sheet.

In contrast, Bethlehem often makes rolls so small that they can be lifted by hand. You can get virtually *any* size or type of forged, hardened roll, simply by giving us specifications. Whether you need one roll or a hundred, Bethlehem can do the job right—and prices are always competitive.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

TYPICAL USES FOR BETHLEHEM FORGED-STEEL ROLLS

- **Cold-rolling ferrous sheets and strip**
- **Running-down and finishing operations on copper and brass sheets**
- **Hot- and cold-rolling aluminum sheets**
- **Cold-rolling aluminum foil**

BETHLEHEM STEEL

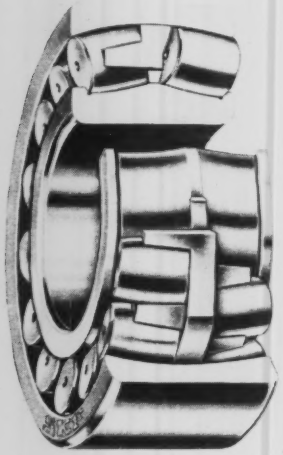
BETHLEHEM STEEL

SKF engineering solves major bearing problems

NEW SPHERICAL ROLLER BEARING SOLVES PROBLEMS OF HIGH LOADS, SPEEDS, AND ECCENTRICITIES IN VIBRATING SCREEN OPERATION

Vibrating screens give bearings a strenuous workout. They subject them to heavy loads, high speeds and eccentric motion.

To overcome these problems, SKF has developed a *new spherical roller bearing for vibrating screens in the mining, quarrying, chemical, steel and paper industries.*



New Series 4523 Screen Bearing

It's designed to—

1. PROVIDE GREATER LOAD-CARRYING CAPACITY. It gives an average rating increase of 37% and 2.85 times longer fatigue life than the original spherical roller bearing. These increases are obtained by utilizing longer rollers (Fig. 1), closer conformity of roller contour to ring contour.

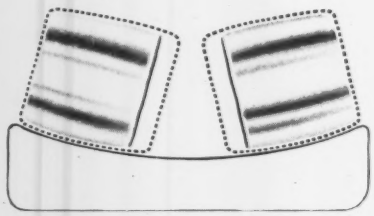
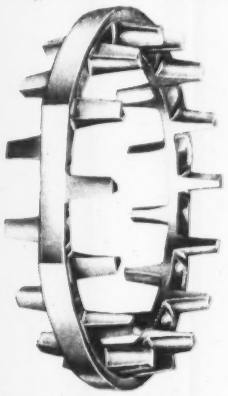


Fig. 1

2. OPERATE AT COMBINED HIGH ECCENTRICITY AND SPEED. This new bearing is equipped with a cage that withstands the stresses and wear caused by combined high operating speeds and by loads resulting from increased eccentric motion of the bearing.

So in this new bearing, SKF uses a cage made of centrifugally cast bronze having axially drilled and reamed pockets of a shape that conforms closely to the rollers' shape. Its spherical O.D. conforms to the contour of the outer ring sphere. It is symmetrical and made in one piece for dynamic stability. Thus, the cage is centered on large areas of contact located where effective lubrication is assured.



Centrifugally cast machined bronze cage

The new SKF Screen Bearings conform to 223 Series Spherical Roller Bearing dimensions. For details on the sizes available, call your nearest SKF sales office or authorized SKF distributor. Write for Bulletin 466—"Screen Bearings to Meet the Needs of Vibrating Screens."

7851

Spherical, Cylindrical, Ball and "Tyson" Tapered Roller Bearings

EVERY TYPE—EVERY USE

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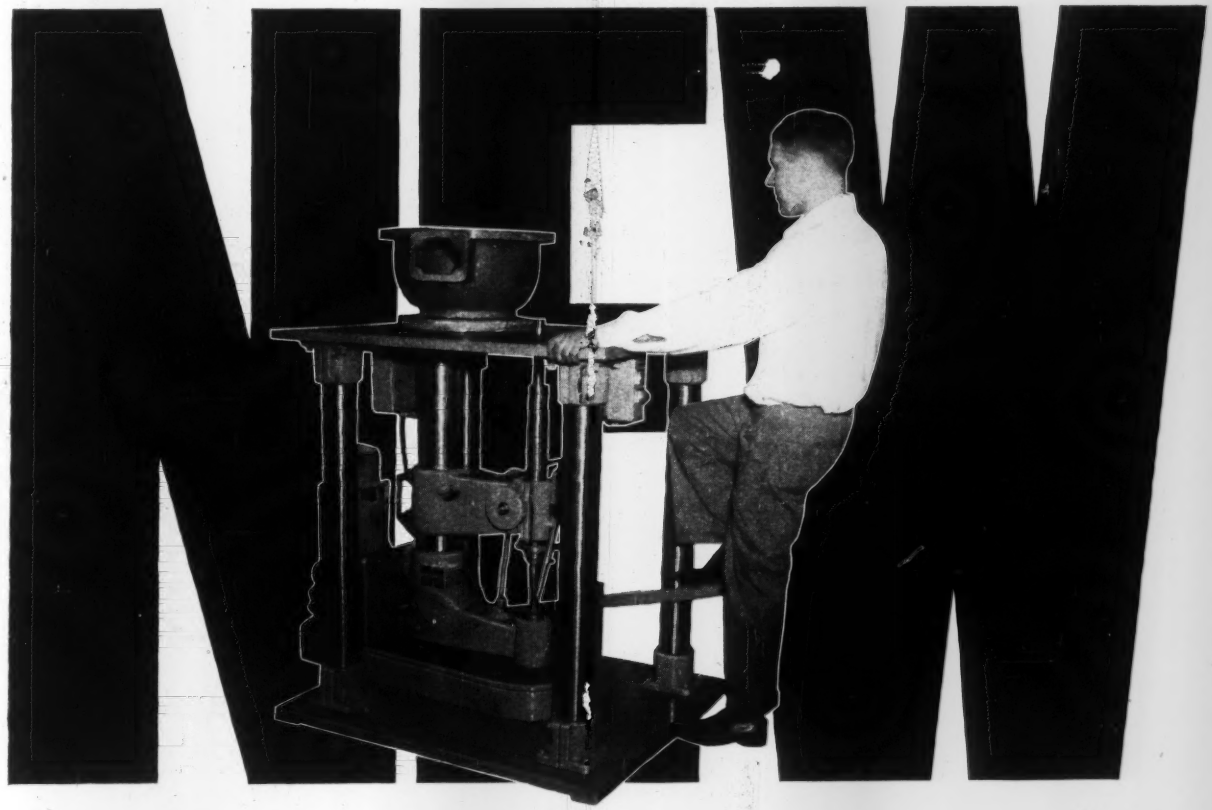


"BUFFALO" BACK SPOT-FACER HANDLES 1000 LB. CASTINGS, AT PRODUCTION SPEED!

This heavy-duty "Buffalo" No. 22 Back Spot-facer is newly-designed for **fast** spot-facing of holes in flanges of large valve bodies, pump housings and other work pieces where it is impossible to spot-face a hole from the top. A rigid, ruggedly-constructed machine, it will spot-face to diameters up to 2½". Its large 36" x 43" table will handle castings weighing as much as 1000 pounds.

Three speed rates — 165, 255 and 400 rpm — are provided through a 2-HP, 350 rpm gear motor plus a C-section drive. The convenient foot treadle feed enables the operator to have both hands free to locate and hold the work. The spindle nose is bored for arbors with No. 4 Morse taper shanks, and the arbor can be locked in the spindle nose. Quarter turn, gunlock type cutters are recommended for use with this machine.

You can realize lower production costs with the "Buffalo" No. 22 Back Spot-facer. Contact your "Buffalo" machine tool dealer, or write for Bulletin 4078 today!

For Smaller Back Spot-Facing Operations on lighter castings, ask your "Buffalo" machine tool dealer about the "Buffalo" No. 18 Models A and B Back Spot-Facers. Or, write direct for Bulletin 3123.

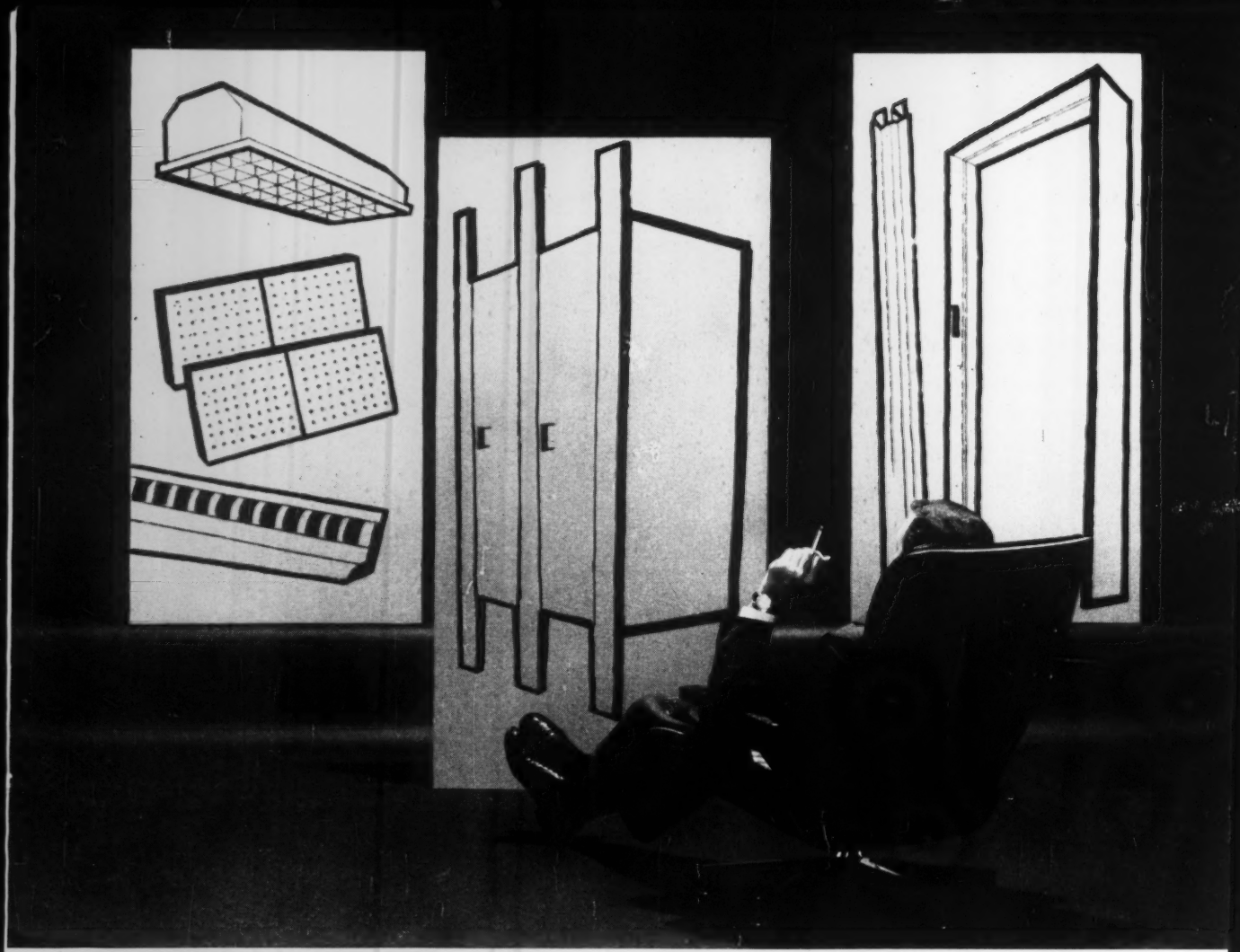
ESTABLISHED 1877 "Buffalo" MEMBER N.M.T.B.A.

BUFFALO FORGE COMPANY

158 MORTIMER STREET • BUFFALO, N. Y.

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

DRILLING • PUNCHING • SHEARING • BENDING



THE EASY WAY TO PREVENT CORROSION IN YOUR PRODUCT? SPECIFY ZINC-COATED STEEL SHEETS, OF COURSE!

There's just nothing like zinc-coated steel sheets for enduring, economical corrosion prevention in the products you manufacture such as light troffers, metal ceiling tiles, baseboard heating units, sliding door hardware and scores of other products.

Take the formability of such sheets, for instance. With either electrolytic or continuous process zinc-coated steel, the tight coating can take the severest fabrication operations and never flake or peel. Result: permanent corrosion resistance for longer life and lasting beauty. First cost: low. Maintenance costs: nil.

How about paintability? Electrolytically zinc-coated steel sheets, chemically treated, are unexcelled for painted products. Paint digs in and holds its unbroken smoothness and beauty for keeps.

In electrolytic zinc-coated steel, the name that stands out is Weirzin. In continuous process zinc-coated steel sheets, it's Weirkote. Let us show you how Weirzin or Weirkote—or both—can help you meet your manufacturing requirements better.

Write for free informative brochure on each today. Weirton Steel Company, Dept. B-2, Weirton, W. Va.

WEIRTON STEEL COMPANY

WEIRTON STEEL COMPANY

WEIRTON, WEST VIRGINIA

a division of

NATIONAL STEEL CORPORATION

This Week in STEEL The Metalworking Weekly

September 1, 1958
Vol. 143 No. 9

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STEEL, the metalworking weekly, is selectively distributed without charge to qualified management personnel with administrative, production, engineering, or purchasing functions in U. S. metalworking plants employing 20 or more. Those unable to qualify, or those wishing home delivered copies, may purchase copies at these rates: U. S. and possessions and Canada, $10 a year; all other countries, $20 a year; single copies, 50 cents; Metalworking Yearbook issue, $3. Published every Monday and copyright 1958 by The Penton Publishing Co., Penton Bldg., Cleveland 13, Ohio. Accepted as controlled circulation publication at Cleveland, Ohio.

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FIRST

NUMERI-TROL Tape Controlled Precision Profiling Machines

FIRST to provide 360° work rotation for 3-dimensional machining of complex parts

FIRST to combine grinding, dressing and dressing compensation with milling

Numeri-Trol slashes lead time, tooling cost and machining time of prototypes and precision parts; it ends the need for cams, templates or models.

Features include tape-controlled grinding, rotary and longitudinal milling and 360° work rotation. Uses magnetic or punched tape systems. See your Ex-Cell-O Representative, or write direct.

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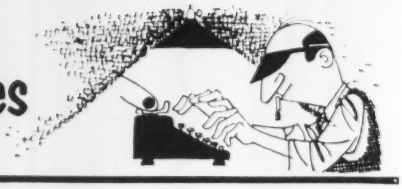
XLO EX-CELL-O FOR PRECISION

EX-CELL-O CORPORATION DETROIT 32, MICHIGAN

behind the scenes



Happy Labor Day

Because today is Labor Day, we feel that all us slobs who toil for a living should pause and pay it some attention. We take for our text one of the resolutions passed in 1900 by the International Socialist-Labor Congress, assembled in Paris. The resolution favored the abolition of the capitalistic class.

In their zeal for improving the lot of man, uplifters, and malcontents frequently find themselves marching side by side toward the elusive land of brotherhood and equality. Harmonizing their hosannas, they jointly recommend and endorse legislation that will hasten the day when the banker shall lie down with the debtor, when the capitalists shall have been abated, and unemployment shall be no more.

The hard fact remains that, in the long and usually wicked history of the world, neither legislation nor revolution has been successful in bringing about a return to Eden. Labor, however, refuses to accept this dismal report and continues to submit resolutions calculated to lift men closer to the angels.

Today, the pursuit of Utopia will cause oratory and beer to flow in mighty profusion all over the country. Demagogues, pedagogues, clergymen, politicians, mutineers, and racketeers will tell us that the New Jerusalem is at hand, an assurance that will comfort us exceedingly . . . but not quite as exceedingly as the hammock most of us will hit on this glorious Labor Day, 1958.

Executive Pay

The equality of man as practiced by Loyalist Spain in 1937 confused most of its supporters except those who never had anything. Generals received the same pay as privates; manufacturers drew the same wages as porters. Labor was encouraged to believe that it had reached the promised land, but even before General Franco's fascists gained the upper hand, some salary adjustments had been made among the Loyalists. Perhaps they didn't quote the phrase, but they accepted it: The workman is worthy of his hire.

This week STEEL presents a report on what it costs to hire a steel executive. In the never-never land of sweetness and light, an executive vice president can be hired for the same wage that will hire a sweeper, but not in the U. S. of A. in 1958. This year the average chief executive of the bigger iron and steel companies will draw about $186,000, but we know that most of you will be quick to sympathize with these boys because that is 4.3 per cent below the 1956 figure—they made $194,000 in 1956.

McKinsey & Co., New York consulting firm, turned over a bushel of figures to STEEL for editorial digestion. The article that resulted begins on Page 38.

The average assistant chief executives, or seconds in command, drew 68 per cent of their superiors' pay. A body would think that 68 per cent of $186,000 would hire an army of assistant chief executives, but the truth is—as the Spanish Loyalists discovered—a good man is worthy of his hire.

Hot Corpse No Paradox

The leap from $186,000 to 15 cents is likely to give you the bends, but, nevertheless, we would like to direct your attention to the smaller figure. For that trifling amount, the Superintendent of Documents, Washington 25, D. C., can be induced to send you a copy of National Bureau of Standards Handbook 65. It describes the safe handling of bodies containing radioactive isotopes. Nobody wants to fool around with radioactive cadavers, but if you have to, you may as well do it right, and that's where this 15-cent booklet can help you. A curious note at the bottom of the announcement affords some mixed relief: The publication notes that highly radioactive bodies will be encountered only rarely, at least for the next few years.

Addenda

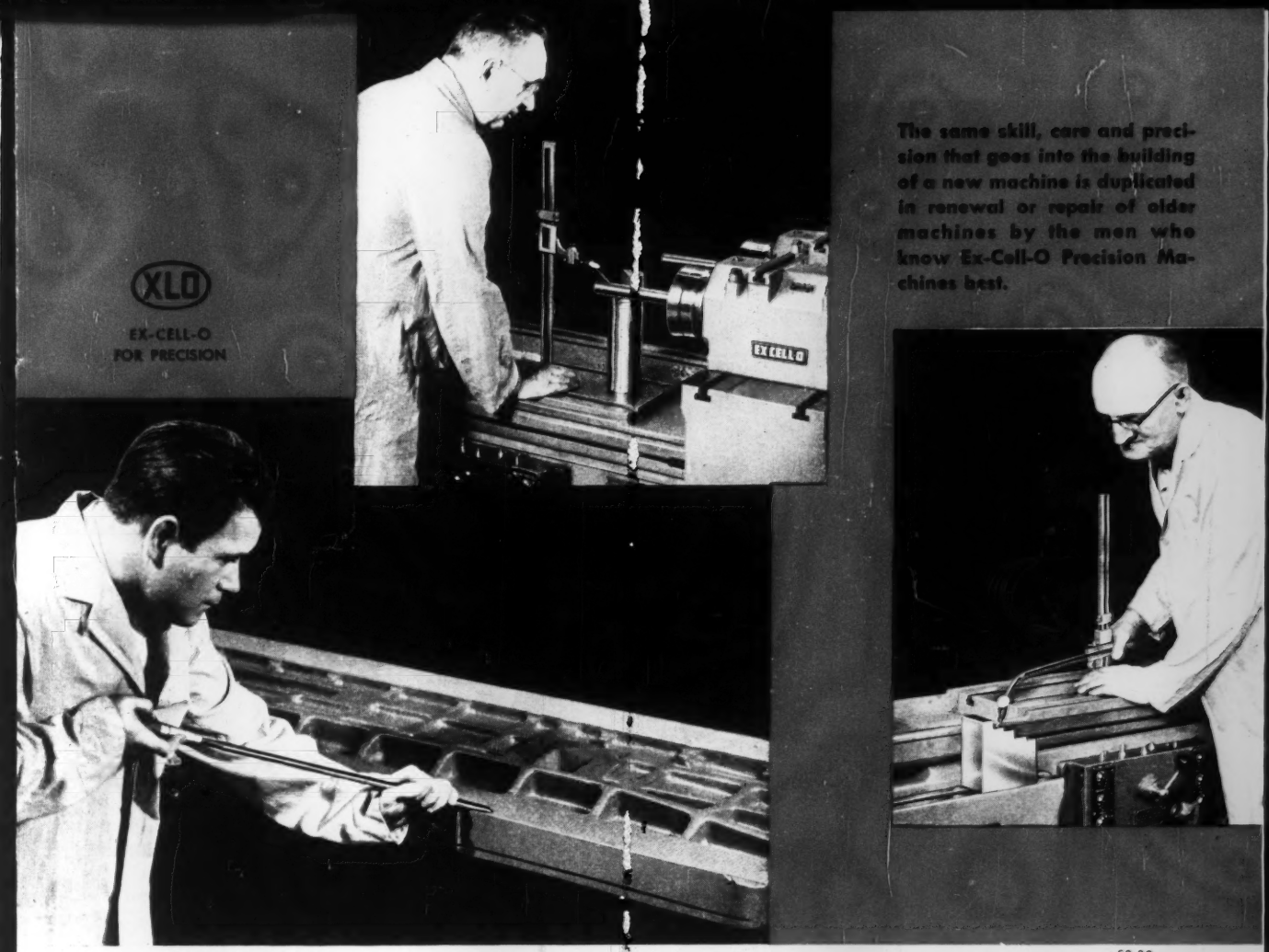
McFee's eels cost $148.40. You see, the rate of premium is 1¾ times for two years. This should be understood, but we didn't know it either. C. G. Lohmann, Hart & Cooley Mfg. Co., Holland, Mich., who spent 40 cents to send in the wrong answer by special delivery, probably wishes now that his missive had contained a bomb.

Morris Sussman, Laurelton, N. Y., and William W. Johnson, Cleveland, were first in with the oldie about the string around the earth: 5.73 in. K. S. Frazier, chief research engineer, Fenestra Inc., Detroit, figured the width of the lake to be 1760 yd. He typed a diagram. Bill Johnson was good enough to include a couple of puzzles for use here—so get out your pencil and try this one:

Two poles, one 7, the other 5 ft high, are thrust perpendicularly into a level playground. Strings are tied from the top of each pole to the base of the other. At what height from the ground will the lines cross?

Shrdlu

(Metalworking Outlook—Page 21)



The same skill, care and precision that goes into the building of a new machine is duplicated in renewal or repair of older machines by the men who know Ex-Cell-O Precision Machines best.

58-39

Are you ready for the business upsurge?

RENEW YOUR EX-CELL-O MACHINES NOW!

Better business is just around the corner, and now's the time—when your present Ex-Cell-O equipment may not be in continuous service—to release idle machines for renovation before full production begins once more.

Ex-Cell-O's facilities for machine repair or renewal are geared to your specific needs—whether it's a planned modernization program or an emergency repair job. The service is fast, the workmanship thorough; and, of course, necessary replacements are Ex-Cell-O "original equipment" precision parts.

For complete satisfaction and guaranteed results, put your Ex-Cell-O machines in the hands of the men who know them best. Contact your local Ex-Cell-O Representative, or call direct for complete details.

EX-CELL-O CORPORATION *Machinery Division*
DETROIT 32, MICHIGAN

MANUFACTURERS OF PRECISION MACHINE TOOLS • GRINDING AND BORING SPINDLES • CUTTING TOOLS • TORQUE ACTUATORS • RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS • AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT

MINIMUM MAINTENANCE FOR TYLER SELF-SERVICE UNITS is assured by proper design and material selection. Photo above shows unit during fabrication. Inner and outer walls made of Republic Galvannealed Steel Sheets meet Tyler's requirements for strength, corrosion-resistance, and economy.

In Tyler Refrigerated Food Sales-Cases . . .

REPUBLIC GALVANNEALED SHEETS PROVIDE STRENGTH, CORROSION PROTECTION, ECONOMY

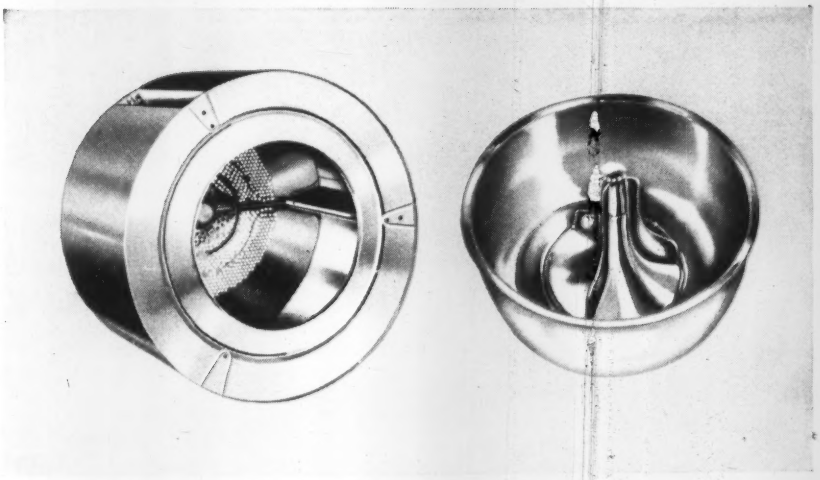
In the production of self-service refrigerated food sales-cases, the Tyler Refrigeration Corporation, Niles, Michigan and Waxahachie, Texas, maintains a common objective in design and material selection. This objective is reliability—the ability to withstand year-in, year-out use and abuse with minimum maintenance.

In keeping with this objective, Tyler has found Republic Galvannealed Sheets ideal for inner and outer walls. These interior parts call for strength and corrosion-resistance. Manufacturing requirements call for good ductility.

Republic Galvannealed Sheets meet all of these requirements and provide initial and long-term economy as well.

Republic Galvannealed has a proved record of performance in thousands of difficult product applications. Its tight, uniform zinc coating, furnace fired for further corrosion-resistance, will take all ordinary forming operations. It can be sheared, blanked, pierced, formed, flanged, soldered, deep drawn, beaded, and Pittsburgh Lock Seamed with ease.

Your Republic representative will be glad to discuss the many advantages of Republic Galvannealed Sheets in relation to your product or production requirements. Contact him today, or mail coupon for further information.



TOP PERFORMANCE AND SALES APPEAL ARE PROVIDED by the use of Republic ENDURO® Stainless Steel for both tub and drum in Speed Queen's Royal Pair Automatic Washer and Dryer. Speed Queen, a division of McGraw-Edison Company, Ripon, Wisconsin, specified ENDURO for two basic reasons. First, its gleaming, smooth, hard surface provides maximum protection for the finest fabrics. Second, ENDURO is unaffected by dyes, soaps, or detergents. These and other advantages may help you solve a product or production problem with ENDURO. Send coupon for data.

REPUBLIC ELECTRO PAINTLOK® SHEETS PROVIDE PROTECTION against corrosion in this ingenious trap produced by the Self Sett Mouse Trap Company, Cleveland, Ohio. A series of automatic doors and pivoted ramps leads the rodent to his destruction in a tank of water. The chemically treated zinc coating on Republic Electro Paintlok holds painted finish securely—provides the corrosion-resistance required to maintain trap operating efficiency. What's more, this surface leaves the mill in prime condition for painting and is not damaged by any forming operation permitted by the base metal. For details, mail coupon.

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- ☐ Continuous Galvanized Sheets
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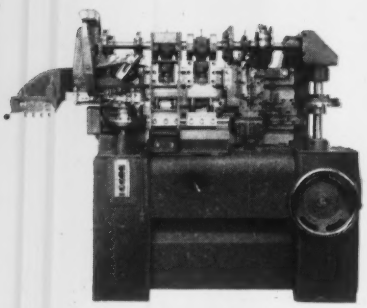
Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

THE FIRST ENTIRELY NEW FOUR-SLIDE IN FIFTY YEARS!



Visit Booth 1834, Metal Show, Cleveland, Oct. 27—31

A development of industry-wide importance is the Torrington Verti-Slide—a new vertical 4-slide that is the first major innovation in the basic field of wire and strip forming equipment in half a century!

The Verti-Slide was designed to meet a serious need for greater versatility, lower tooling cost, faster set-up time and reduced floor space. We urge you to investigate the new Torrington Verti-Slide in detail.

THE TORRINGTON MANUFACTURING COMPANY

TORRINGTON, CONNECTICUT • VAN NUYS, CALIFORNIA • OAKVILLE, ONTARIO

LETTERS
TO THE EDITORS

STEEL Part of DoAll Show

During the last several years, we have sponsored traveling educational exhibits entitled, "Civilization Through Tools" and "The Story of Measurement." The non-commercial presentations have been highly praised by technical societies.

We are now working on the third, "The Story of the Cutting Edge." As part of it, we will present slides on a 16-ft screen. We would like to show the six different colored chips pictured in your exhibit, "Chip Colors—What They Tell," from your Sept. 23, 1957, insert article, "How To Get More from Machine Tools."

May we borrow the negatives?

C. G. Schelly
Director of Educational Research
DoAll Co.
Des Plaines, Ill.

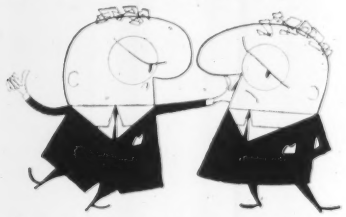
• STEEL *is pleased to be a part of DoAll's presentation.*

Lauds Miniaturization Story

Your article, "Miniaturization: When Is It Needed and What Is It?" (July 28, Page 44), is excellent and truly presents a balanced view of miniaturization—past, present, and future.

Norman Weissman
Ruder & Finn Inc.
New York

Tips on Hard-Time Selling



We would appreciate ten copies of the article, "Needed: Hard-Time Selling" (Aug. 11, Page 32). We think this is an excellent one and would like to send copies to our salesmen.

Farley G. Fish
Sales Manager
A. G. Kaddis Screw Products Co. Inc.
Rochester, N. Y.

More Data on Annealing

Your interesting analysis, "Where Continuous Annealing Is Going" (July 28, Page 72), starts with a chart listing details of lines in operation. This chart includes information on two installations (evidently Selas lines) which should be clarified.

For installation "F," rated production is listed as 500 fpm. This line is actually rated at 600 fpm, and has been operated over 900 fpm without addition or alteration of equipment. It is also an all-gas

(Please turn to Page 12)

NEW!

N-PBM
Jib Master
BY
Borg-Warner®
INDUSTRIAL CRANES

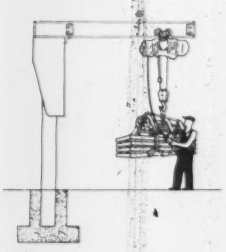
The Borg-Warner slogan, "Design it better . . . Make it better", has been followed to the letter in the new Jib Master! Here is a quality-constructed jib crane specifically designed to meet the needs of most industrial plants.

Entirely self-supported, Jib Master swings through a full 360° for efficient materials handling over a large area. All structural and mechanical parts are designed and tested to withstand rated loads with a generous safety factor built in.

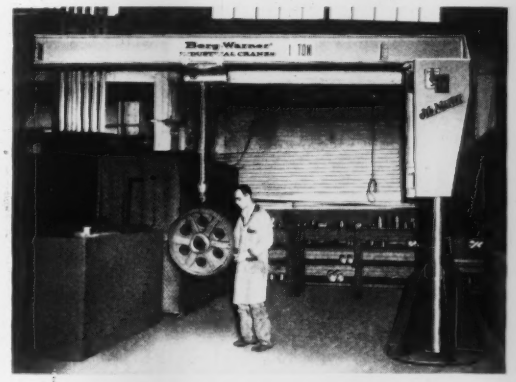
A comparison of Jib Master features demonstrates the rugged construction and the ability of this crane to provide fast, efficient and safe load handling for years of trouble-free service. Write today for full details or call your local B-W Industrial Cranes distributor.

Jib Master gives you all these quality features:

1. Head assembly pivots on heavy-duty tapered-roller thrust bearing.
2. Head assembly accurately positioned and welded for perfect alignment of jib. Heavy side plates.
3. Two large-diameter, carefully machined side rollers. Each roller has two precision ball bearings for smooth, easy jib rotation.
4. Heavy wall seamless steel column.
5. Heavy circular base plate, 6 large gussets and column are welded to form a rigid frame.



The Jib Master is also available in Pillar Foundation Mounted type, designated N-PFM. Either Jib Master model can be used with chain block or electric hoist.



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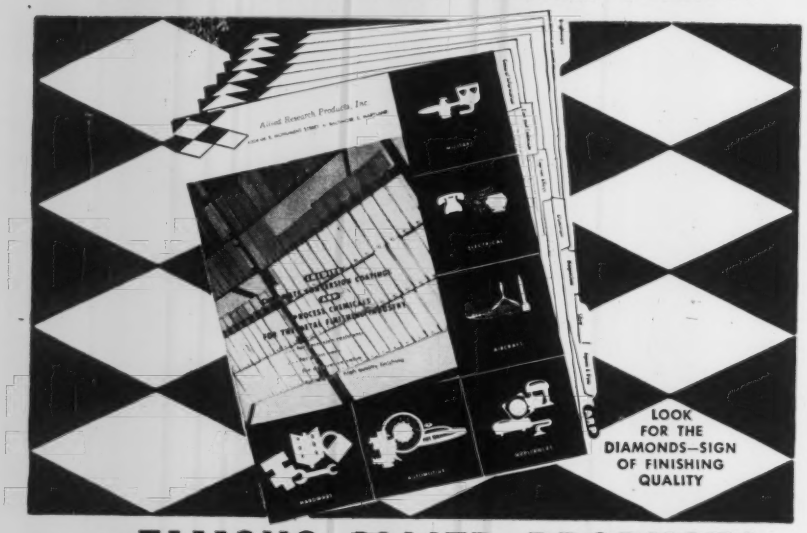

on FAMOUS ALLIED PRODUCTS

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LETTERS

(Concluded from Page 10)

line, having no electric heating.

The four lines identified as installation "L" should be among those footnoted as expansible, since provision was made to provide a 50 per cent increase in strip speed through relatively simple and inexpensive addition to any of the four furnaces. They already have been operated for limited periods at 40 per cent above the rated speed of 500 fpm without alteration.

John F. Black

Manager of Sales
Steel Mill Div.
Selas Corp. of America
Dresher, Pa.

Agrees with Editorial

Congratulations on your excellent editorial, "Russia's Weakness" (July 7, Page 33). The Communists' failure to give due appreciation to moral and spiritual values will eventually prove to be their undoing.

I always turn first to your editorial and am always rewarded with a meaningful message.

Perry D. Helser

Co-ordinator
Light, Rare & Precious Metals
Office of Minerals Mobilization
U. S. Department of the Interior
Washington

Keeping Up with New Technique

In the July 21 issue, there appeared an article, "Warm Heading Tackles Tough Metals" (Page 114). We cannot locate our copy and would appreciate a reprint.

Harry N. Davis

R. H. Miller Co. Inc.
Homer, N. Y.

Asks for March Reprint

Please send a copy of the excellent Program for Management article, "Production Control for Profits" (Mar. 17, Page 83).

J. T. Shelton

Vice President
Land-Air Inc.
Cheyenne, Wyo.

Coatings for Metals

I found the article, "Coatings Help Metals Beat Heat" (July 28, Page 66), informative and interesting. Please send a reprint.

P. H. Brotzman

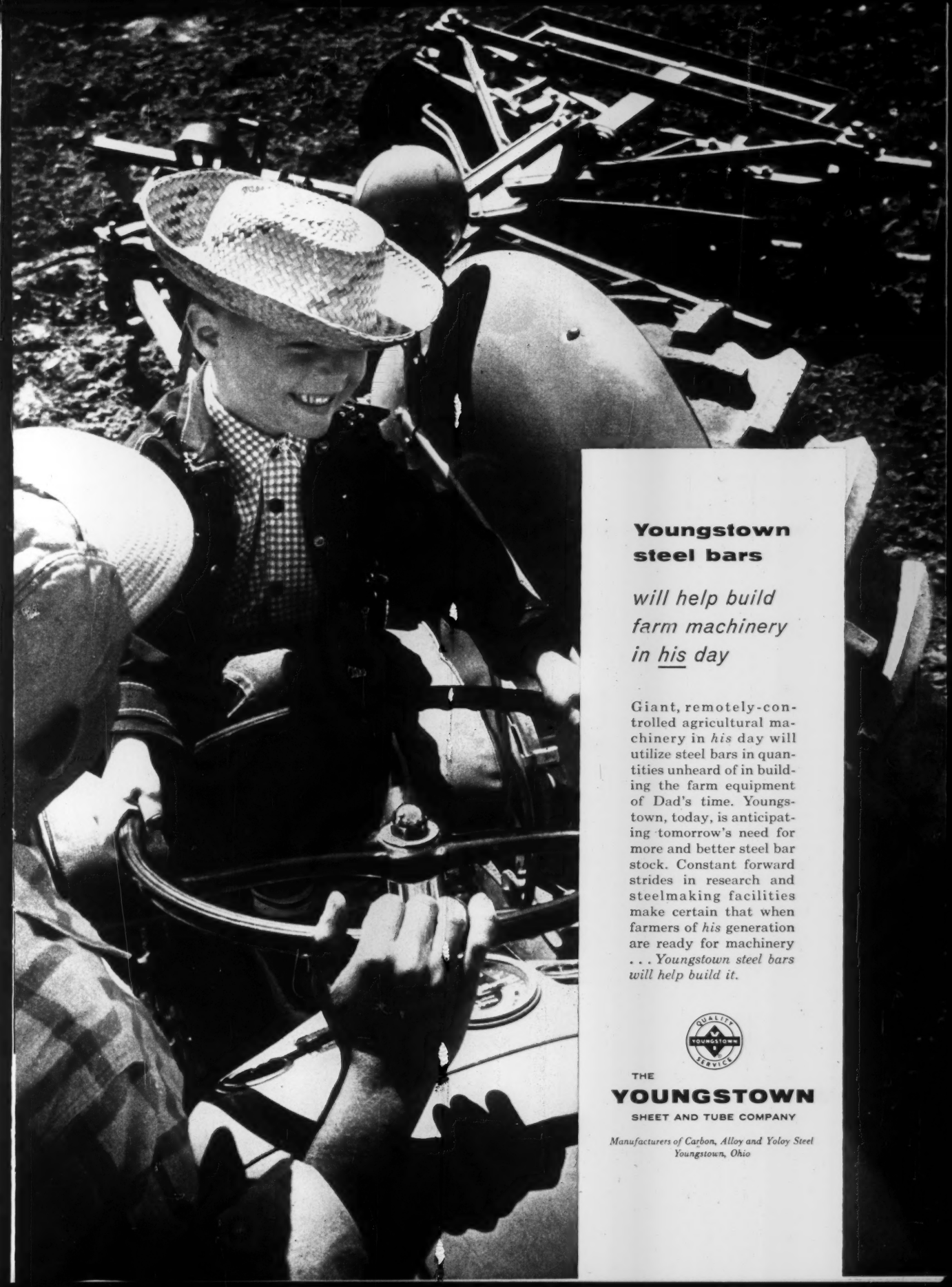
Chief Metallurgist
Firestone Tire & Rubber Co.
Akron

Excellent Presentation

Please send us two copies of your Program for Management article, "Finding Out What Customers Will Buy" (July 14, Page 101). It's a most excellent presentation of sales problems and possible solutions.

Nevin J. Rodes

Marketing Counsellors
Louisville, Ohio



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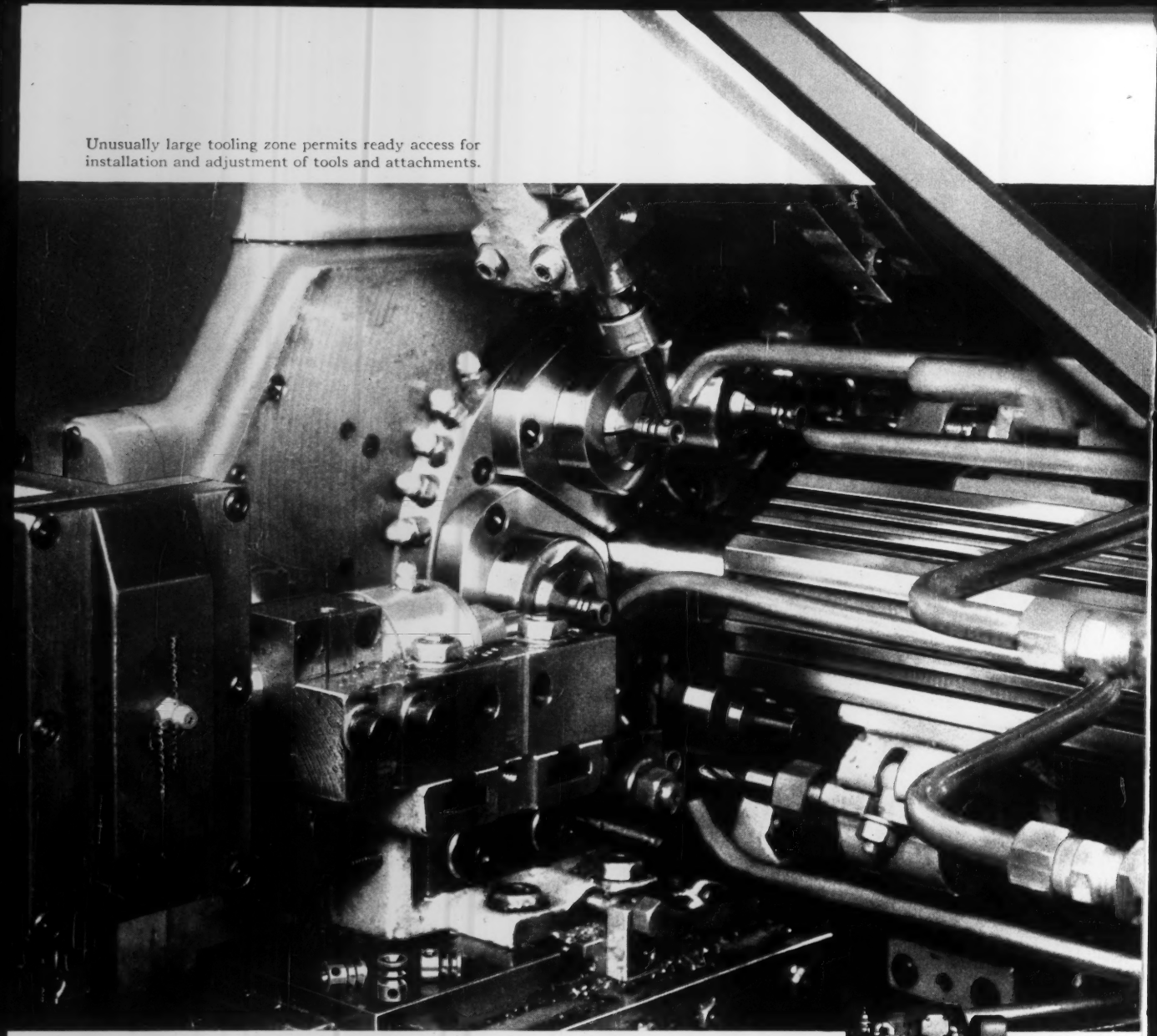

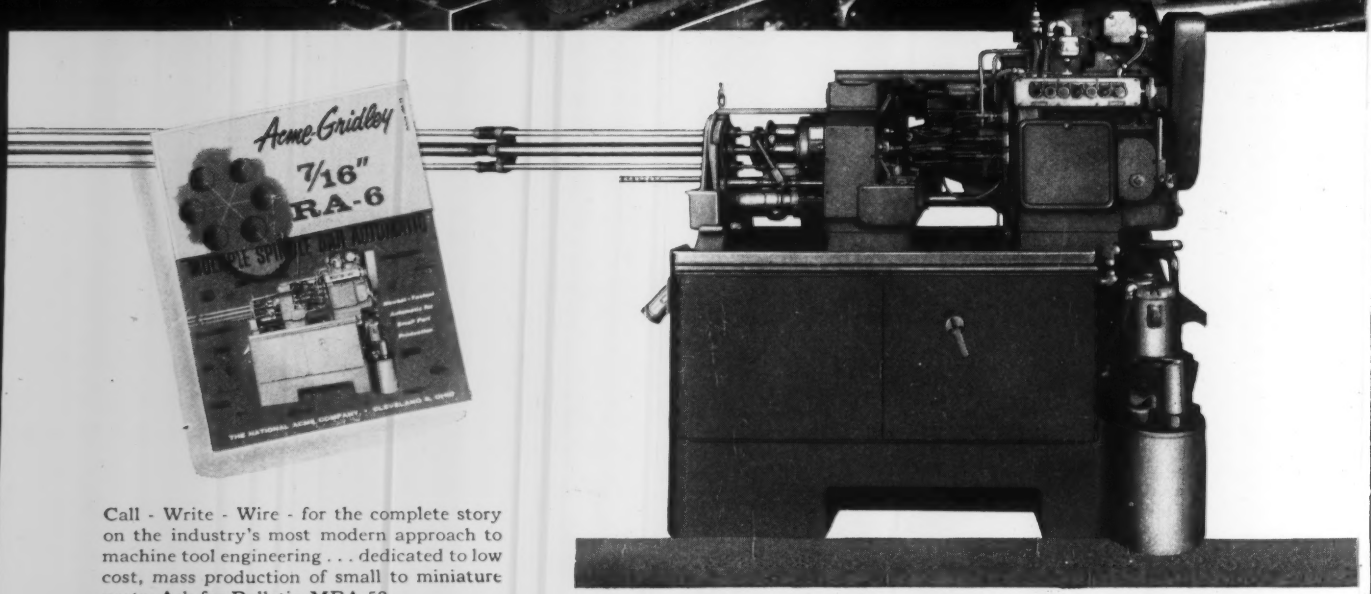

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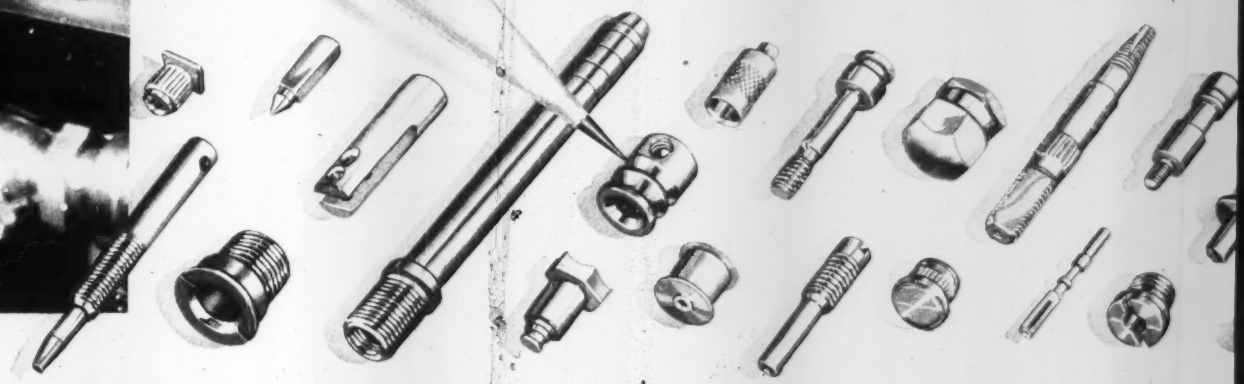

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  greatly increase flexibility
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  provides the "beef", properly distributed that contributes to consistent accuracy at continuous high speeds

Remember...when you buy an Acme-Gridley 7/16" Multiple Spindle Bar Automatic, you're getting the newest, smallest, fastest machine from the world's *only* complete line of multiple and single spindle bar and chucking automatics. We've been making and improving them for 60 years . . . we think we know how!

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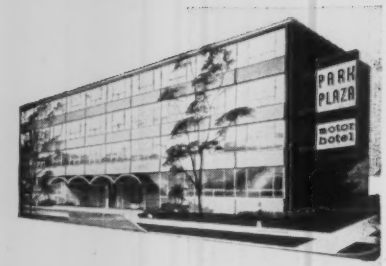

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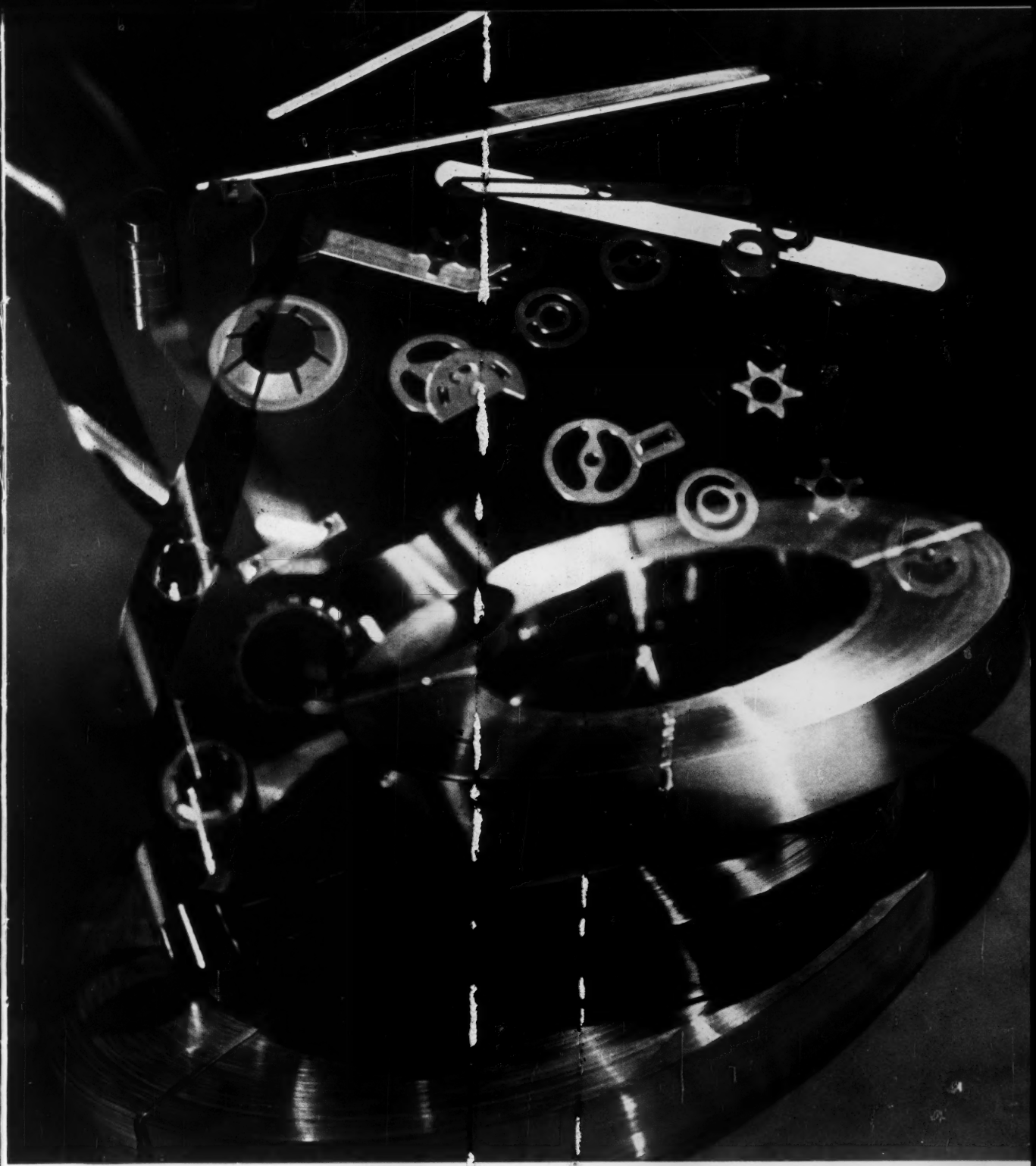

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New seal construction, efficiently designed roller units, dependability, and long life combined with precision manufacture provide unmatched performance. You'll find Jeffrey idler design superior to anything offered today for belt conveyor service.

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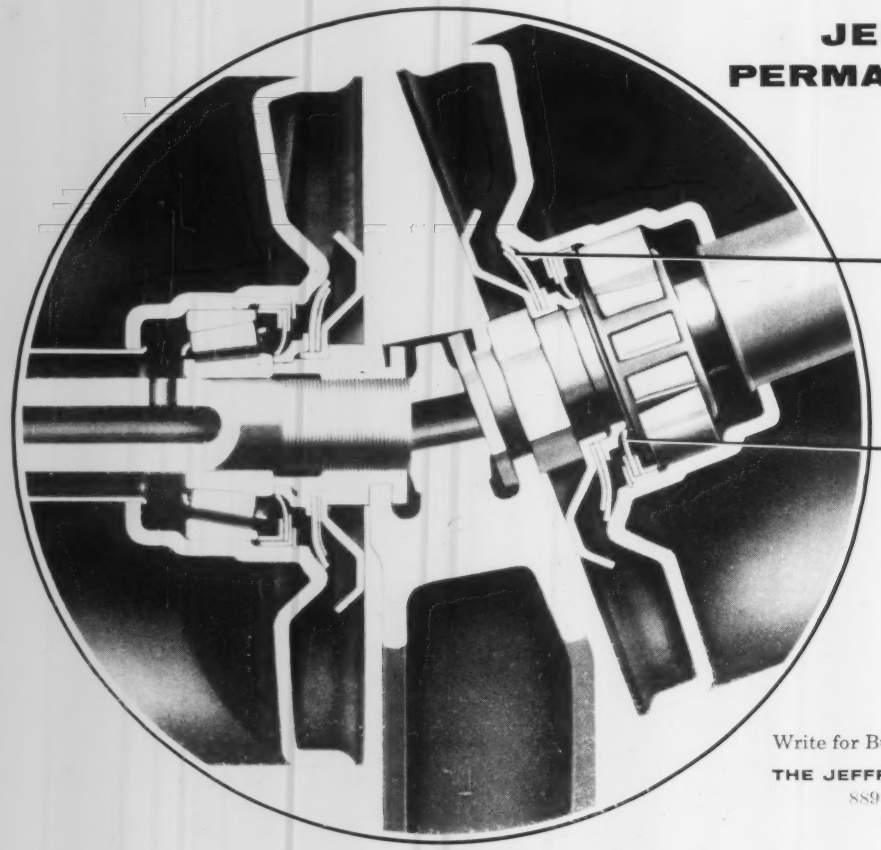

Magnified view of the heart of the PERMASEAL IDLER—shows double flexible diaphragm seals, bearings, and welded roll ends.

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OF MEETINGS

Sept. 7-12, American Chemical Society: National chemical exposition and conference, International Amphitheatre, Chicago. Society's address: 1155 16th St. N.W., Washington 6, D. C. Executive secretary: Alden H. Emery.

Sept. 8-11, Society of Automotive Engineers: Farm, construction, and industrial machinery meeting, production forum and engineering display, Milwaukee Auditorium, Milwaukee. Society's address: 485 Lexington Ave., New York 17, N. Y. Secretary: John A. C. Warner.

Sept. 10-11, American Die Casting Institute: Annual meeting, Edgewater Beach Hotel, Chicago. Institute's address: 366 Madison Ave., New York 17, N. Y. Secretary: David Laine.

Sept. 11-12, Refractories Institute: Fall meeting, Broadmoor Hotel, Colorado Springs, Colo. Institute's address: 1801 First National Bank Bldg., Pittsburgh 22, Pa. Executive secretary: Avery C. Newton.

Sept. 14-19, Instrument Society of America: Annual instrument-automation conference and exhibit, Convention Hall, Philadelphia. Society's address: 313 Sixth St., Pittsburgh 22, Pa. Executive director: William H. Kushnick.

Sept. 15-17, American Rocket Society: Fall meeting, Hotel Statler-Hilton, Detroit. Society's address: 500 Fifth Ave., New York 36, N. Y. Secretary: A. C. Slade.

Sept. 16-18, Electronic Industries Association: Fall meeting, St. Francis Hotel, San Francisco. Association's address: 1721 DeSales St. N.W., Washington 6, D. C. Secretary: James D. Secrest.

Sept. 17-18, American Supply & Machinery Manufacturers' Association Inc.: Industrial distribution forum, Hotel Statler-Hilton, Cleveland. Association's address: 2130 Keith Bldg., Cleveland 15, Ohio. Manager: W. B. Thomas.

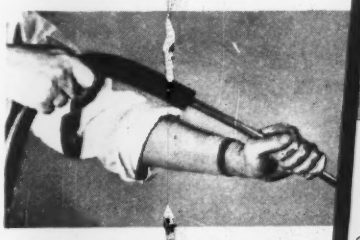
Sept. 17-19, National Industrial Conference Board Inc.: General marketing conference, Waldorf-Astoria Hotel, New York. Board's address: 460 Park Ave., New York 22, N. Y. Secretary: Herbert S. Briggs.

Sept. 19, Malleable Founders Society: Fall semiannual meeting, Hotel Cleveland, Cleveland. Society's address: 1800 Union Commerce Bldg., Cleveland 14, Ohio. Executive vice president: Lowell D. Ryan.

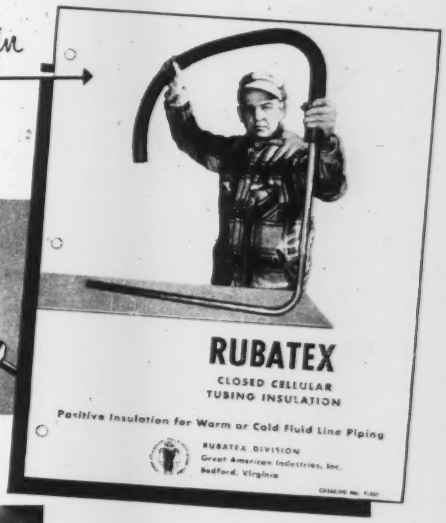
Sept. 22-24, American Management Association: Personnel conference, Statler-Hilton Hotel, New York. Association's address: 1515 Broadway, New York 36, N. Y. President: Lawrence A. Appley.

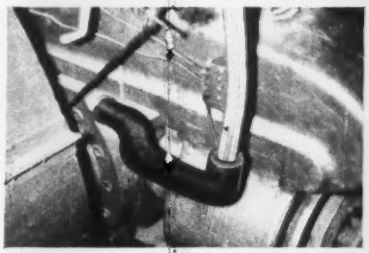
How to keep consistent temperatures and/or prevent condensation on warm or cold lines

Send for free Bulletin



Rubatex Tubing can be slipped onto piping before it's installed on air conditioning unit or system.





Flexible tubing can be easily installed onto piping with swings and bends up to 180°.

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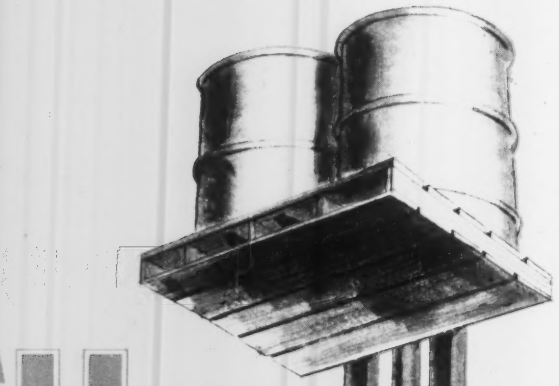
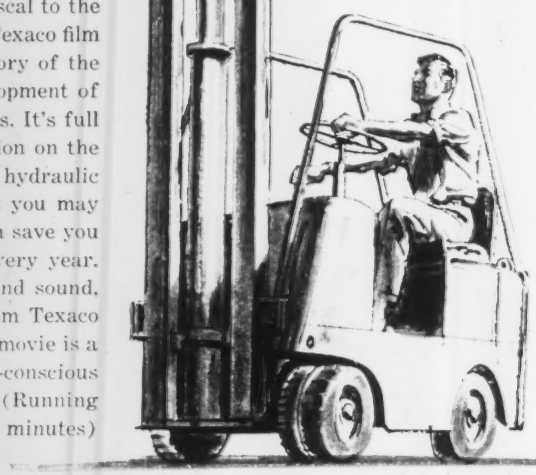
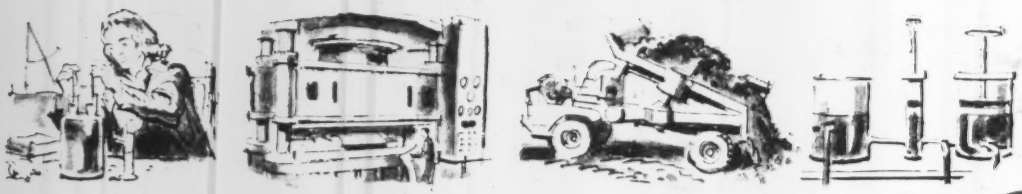


From Pascal to the present, this new Texaco film tells the story of the discovery and development of hydraulic principles. It's full of valuable information on the care of your hydraulic equipment – facts you may not know that can save you thousands of dollars every year. Filmed in color and sound, this new 16mm Texaco industrial service movie is a "must" for every cost-conscious plant engineer. (Running time: 25 minutes)



For information regarding FREE SHOWING to your plant or organization, write Hydraulic Film, Room 2006, The Texas Company, 135 E. 42nd St., New York 17, N. Y.



TEXACO

LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

Metalworking Outlook

What Wildcat Auto Strikes Mean

Wildcat strikes at Big Three auto plants last week indicate two things: 1. The temper of the workers is to accept a walkout despite weeks or months of layoffs in 1958. 2. UAW leaders, by more frequently looking the other way as wildcats break out, are stepping up pressure on management. Union President Walter Reuther had been stopping unauthorized strikes quickly, but he's not so rapid now. Such tactics are common when a negotiating situation nears the climax. Odds are rising for a big strike. Probable timing: Late September or early October.

Allis-Chalmers, IUE Sign

Allis-Chalmers Mfg. Co. and the IUE have signed a two-year pact covering 1250 at Norwood, Ohio. Terms include: 6 cent per hour wage hike now and again on Aug. 15, 1959; increase in night shift differential to 12 cents per hour; fringe benefit improvements. Negotiations with the UAW at Allis-Chalmers, International Harvester Co., and Caterpillar Tractor Co. have been recessed following contract extensions. Reason: They're waiting for settlements in Detroit.

Secret Labor Pact at AMC

The UAW is having a tough time explaining a labor contract involving American Motors Corp. appliance workers which was signed June 9, but which has just come to light. The pact applies to AMC's Grand Rapids, Mich., appliance plant. The UAW agreed to freeze wages for two years. The 2.5 per cent annual improvement factor is eliminated. The cost-of-living allowance is frozen at the present 22 cents an hour. Each worker will lose 30 minutes of relief time a day. AMC will consolidate all appliance operations in Grand Rapids this fall. Some 2600 workers will be drawn from that area and will be represented by the UAW. Out in the cold are workers in AMC's Detroit and Peoria, Ill., plants, represented by the United Electrical Workers and the Mechanics Educational Society of America. Says MESA: "The UAW sold out so it could get 1300 jobs moved to Grand Rapids."

Kelvinator Losing Money

AMC admits its 1958 appliance sales are off more than the industry average, which in the first half was an 18 per cent drop from the same 1957 months. The Grand Rapids consolidation is a move to cut Kelvinator Div. losses. Also look for the company to announce the opening of a Kelvinator plant in Spain. With electrification programs booming in much of Europe, the appliance market should be ripe. Kelvinator is the second largest appliance

manufacturer abroad, and its foreign operations are said to make the largest percentage contribution toward the division's total business.

Capital Spending Dip To End, but—

Look for the decline in capital spending to stop. But outlays aren't going to rise much either, and significant recovery in machine tools is still many months away. New plant and equipment expenditures should reach about $30.8 billion in 1958, compared with nearly $37 billion in 1957 and more than $35 billion in 1956. The third quarter spending will be the lowest this year, at about $30 billion on an annual basis. The fourth quarter should be no lower.

Weathervanes Point Up

Check these business weathervanes: New business incorporations in July rose 3.9 per cent from June, for the third consecutive increase . . . Both spendable earnings and buying power of factory workers rose in July . . . Sales of standard vacuum cleaners for June and July were above any of the comparative months of the past seven years . . . Gross national production was up $3 billion in the second quarter to an annual rate of $429 billion.

Interior Department Wants Helium

Certain that demand for helium in atomic energy, missile, and spacework will grow fast, the Department of the Interior wants 12 new plants to extract the element from natural gas. The department estimates hydrogen amounting to ten times present consumption is wasted in the burning of fuel gases. Industry will be asked to participate in the program. But the U. S. will do the job alone if it has to.

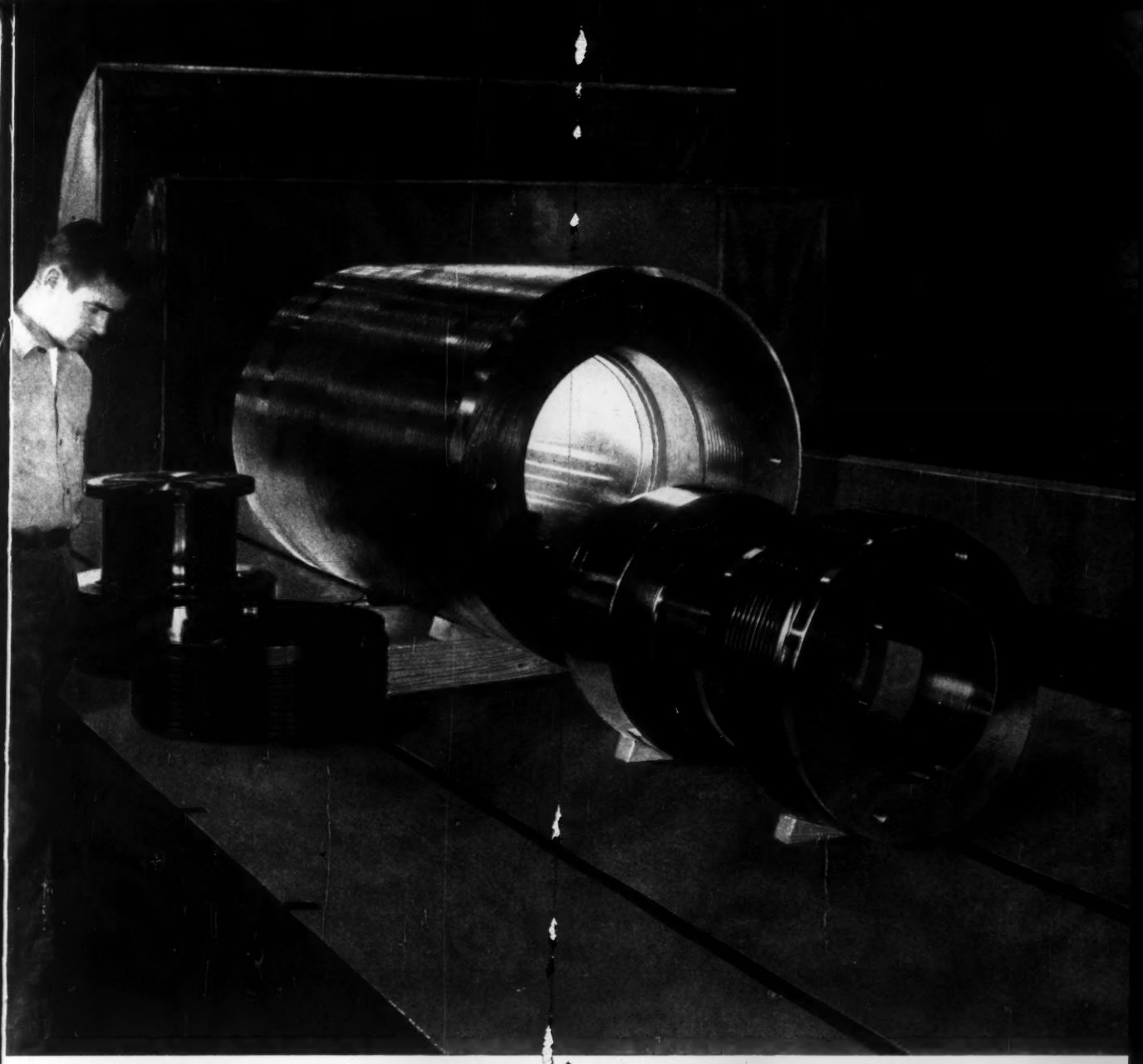
World Steel Slumps

In the first half of 1958, the Commerce Department says world steel production dropped to an annual rate of 288 million tons, vs. 322 million tons in 1957. First half net ton comparisons:

	1958	1957
U. S.	37.8 million	60.6 million
Russia	29.8 million	27.6 million
West Germany	13.1 million	13.1 million
United Kingdom	11.8 million	12.5 million
France & Saar	10.2 million	9.5 million
Japan	6.5 million	7.2 million
Benelux	6.0 million	6.2 million
Italy	3.5 million	3.6 million
Canada	2.4 million	2.7 million

Straws in the Wind

More than $1 billion in private capital was sought for 1190 foreign investment projects in the year ended June 30 . . . Sales of the electronics industry in the second half will show recovery from the first half slump . . . Westinghouse Electric Corp. has started bargaining talks with the IUE . . . A right-to-work amendment will be on the Ohio ballot Nov. 4.



WHO FORGES THE TOUGH ONES? & machines them, too

Assume that you've just designed a high pressure cylinder to be used in the production of high energy explosives. It is a good sized forging—the main cylinder is 50¼" long, 31½" O.D., and 18" I.D.—with high physicals. It must be forged of a highly alloyed chromium nickel molybdenum vanadium steel to obtain a tensile of 164,000 psi . . . a yield point of 153,000 lbs. . . . and hydrostatic test at 30,000 psi.

Naturally, you prefer one responsible source to do the whole job—one organization to melt the steel, forge, and finish all parts to exact prescribed tolerances.

So, call on National Forge, a company that's been producing big forgings for over 40 years—from melting steel through finish machining and protective coating (dulite, in this case) all in one completely integrated plant. Let us quote on your next job for big machined forgings—and demonstrate the answer to "who forges and machines the tough ones . . . best?"

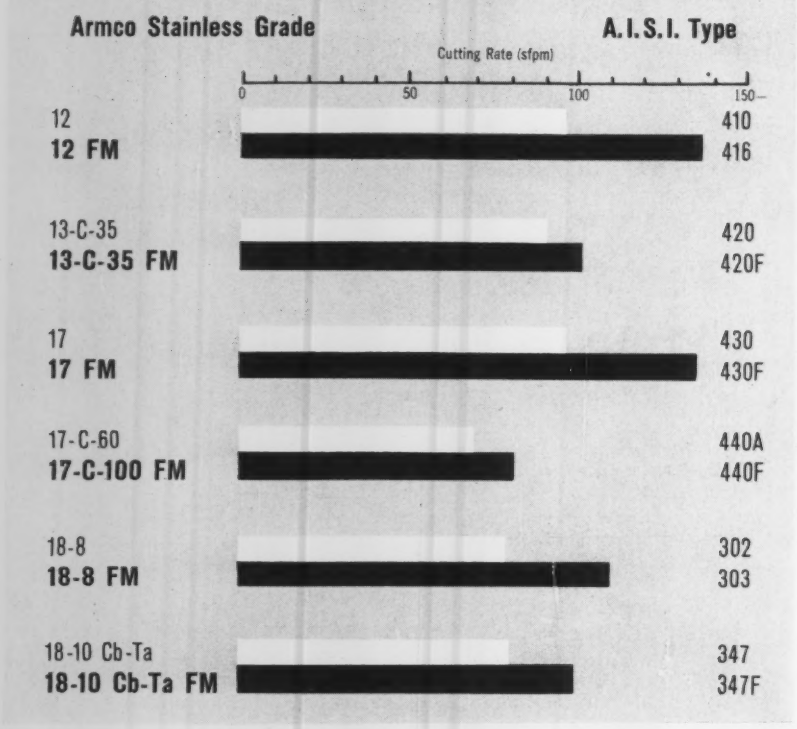
NATIONAL FORGE & ORDNANCE COMPANY

IRVINE, WARREN COUNTY, PA.

For more information on "the tough ones," and the machinery that makes them "best"—write for Bulletin NFO-3.

Why production steps up with ARMCO FREE-MACHINING Stainless Steels

Just check these improved cutting rates



Here's the increased machinability you can about expect from some often-used free-machining stainless steels. All rates are based on speeds in automatic screw machines.

In service, the toughness of stainless steels gives them endurance that ordinary metals can't match. But in part-production, this very toughness can limit machining speeds. That's why Armco produces free-machining counterparts for many widely-used grades of stainless steel bar and wire. Small additions of certain elements make these special grades machine faster. Production rates jump.

TRY THEM

Here's how to prove it for yourself. If you now machine parts from a standard stainless steel, just contact your nearest Armco Sales Office or Armco Stainless Distributor. They will be glad to arrange for you to try out the Armco Free-Machining counterpart of the grade you are now using.

Or, if you would like more information about uniform-quality Armco Stainless Steel bar and wire, just fill in and mail the coupon.

• • •

In addition to stainless steel sheet, strip, plate, bar and wire, Armco produces these other steels for top-quality products: ALUMINIZED STEEL, ZINCGRIP®, ZINCGRIP PAINTGRIP®, Cold-Rolled PAINTGRIP, Enameling Iron, Electrical Steels, High Strength Steels, Welded Steel Tubing, and Long Ternes, as well as high-quality hot- and cold-rolled sheets.

New steels are born at Armco

ARMCO STEEL CORPORATION, 2818 Curtis St., Middletown, Ohio

SEND more information about Armco Stainless Steel bar and wire.

☐ I am interested in free-machining grades

NAME _____ TITLE _____

COMPANY _____

STREET _____

CITY _____ ZONE _____ STATE _____

ARMCO STEEL

Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

Reciprocity: Good or Bad?

Reciprocity sometimes is called a coercive device thought up by the home office to force a customer to buy something he would prefer to get from someone else.

Some companies regularly practice it in selling and buying. Others resort to it only when business is depressed—and the last few months have been no exception.

Small companies, especially, protest that reciprocity practiced by larger companies is unfair competition. With only one or two products and small volume, they say they cannot compete with large companies having diversified product lines and vastly greater purchasing power.

There are two kinds of reciprocity:

1. The kind deliberately fostered by management as company policy.

2. The kind that starts innocuously as part of sales and purchasing policy to express appreciation for an order.

No matter what kind it is, reciprocity can undermine the morale and effectiveness of a purchasing organization.

It can be equally harmful to a sales organization if selling products on merit becomes subordinate to playing the angles.

It can adversely affect engineering and design through the purchase of inferior materials and components.

It can result in higher prices on products purchased when competitive bidding is eliminated.

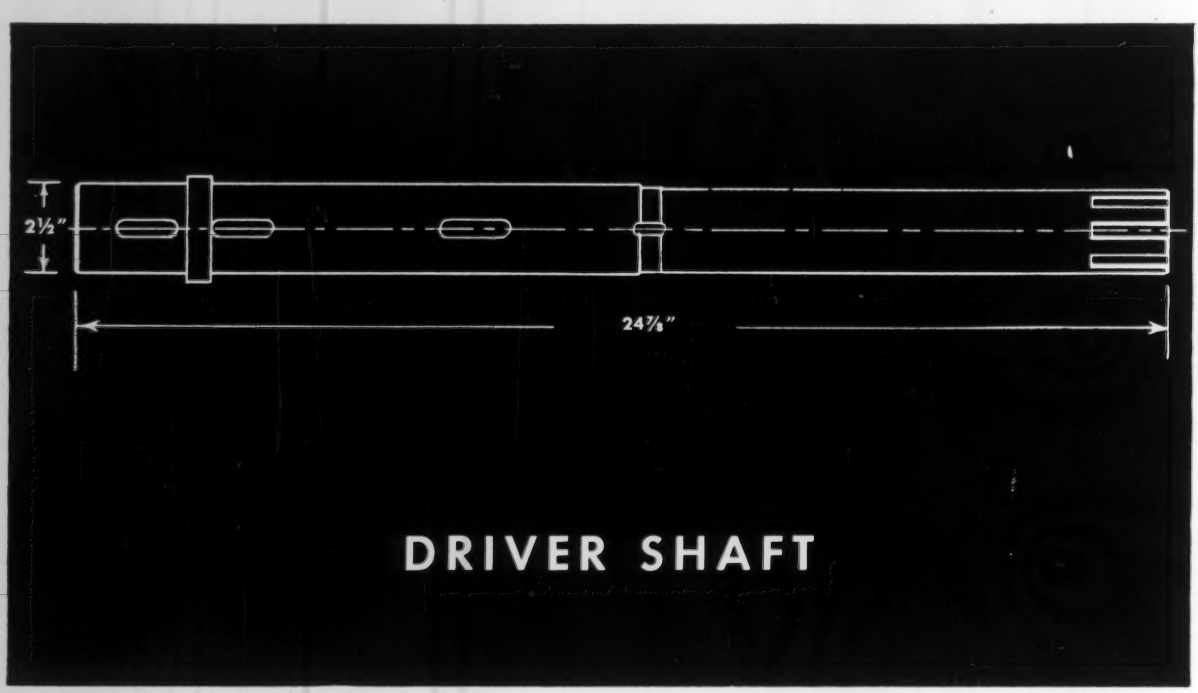
It can lead to retaliation from companies on the "outside."

As we see it, the short term advantages of reciprocity deals are outweighed by long term disadvantages.

We believe that only selling and buying on the bases of quality, service, and fair prices are compatible with the free enterprise system.

Irwin H. Such
EDITOR-IN-CHIEF

4340 (Brinell 350) vs. Rycut® 50 (Brinell 375)



Rycut 50® Reduces Heavy-Duty Shaft Cost 58%

Costs of material and manufacturing of this shaft at west coast shipyard total $193.40 when 4340 alloy steel is used . . . only $80.80 with Rycut 50, a Ryerson leaded alloy steel.

In addition to cost-savings, the leaded alloy steel has a higher Brinell hardness than the 4340—375 as against 350.

With Rycut 50, tool life is longer; tolerances are easier to maintain; finishing requirements are reduced. Feeds and speeds can be higher, required horsepower is reduced, and short-breaking chips are produced.

Manufacturing costs are further reduced because stress-relieving and heat-treating are eliminated between machinings.

Rycut 50 is but one of many leaded steels available from the Ryerson plant near you. Experienced help in selecting the right steel for your operations is available. Why not look into the cost-saving possibilities soon?

RYERSON CERTIFIED QUALITY

RYERSON STEEL®

Member of the ◂PLAN▸ Steel Family®

Principal Products: Carbon, alloy and stainless steel—bars, structurals, plates, sheets, tubing—aluminum, industrial plastics, metalworking machinery, etc.

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK · BOSTON · WALLINGFORD, CONN. · PHILADELPHIA · CHARLOTTE · CINCINNATI · CLEVELAND DETROIT · PITTSBURGH · BUFFALO · INDIANAPOLIS · CHICAGO · MILWAUKEE · ST. LOUIS · LOS ANGELES · SAN FRANCISCO · SPOKANE · SEATTLE

SUB Fund Positions

	AMOUNT (Millions)	OVER MAXIMUM (Adjusted)
General Motors	$91.0	27.5%
Ford Motor	29.8	5.6
Chrysler	16.9	2.6

Source: Company reports, as of first week in August.

Detroit Sizes Up SUB as Labor Issue

Walter Reuther has been talking up pensions, but if automakers do renegotiate contracts they're in better shape to accept changes in unemployment benefits

SUPPLEMENTAL unemployment benefits may be a bigger factor in 1958 auto contract negotiations than most people realize. Changes are needed, but management bargainers don't want Walter Reuther to get credit for increasing SUBenefits that won't add to costs. There's apt to be some noisy claims and counterclaims if the Big Three wind up bargaining on anything but an extension of the present contract.

What Happened?—This peculiar situation had its beginning June 1 when Ford, General Motors, and Chrysler stopped paying into SUB trust funds. Michigan (and several other states) had raised unemployment benefits. Result: Auto companies were paying less than had been anticipated. Funds grew until they were over the maximum position even on an adjusted basis.

About $5 million a month is being paid in benefits, but this won't appreciably deplete the funds. As employment picks up, it seems unlikely that the companies will have to contribute for some time. This saves them a nickel an hour for each man and opens the way for changes in duration of benefits or in credit unit accumulation.

Hazard — Such revisions appear worthwhile, but Ken Porter of the Employers Association of Detroit, says changes may pose hardships on smaller firms which follow industry contract patterns, but whose SUB funds aren't as healthy as the Big Three's. Besides costing them more, they have all the headaches of their bigger brothers.

American Forging & Socket Co., Pontiac, Mich., picked up Chrysler's SUB plan in 1955 when employment was about 350. Now it's under 100, but the firm still must contribute because the SUB fund stands at 75 per cent of maximum ($42,000).

W. L. McRae, American Forging's personnel director, says "Most of our workers exhausted their benefits during layoffs last year and earlier this year. Only eight or ten still are collecting SUB checks."

Headache—Even this handful is enough to point up a major SUB problem. Explains Mr. McRae, "We don't have the big staffs GM and Ford have to administer this program. Our people come straggling in one at a time depending on when they draw their state unemployment compensation. We have one secretary to help them."

Unfair—Does SUB do the job it's supposed to? Mr. McRae doesn't

think so. "We see a man with a couple of kids who gets the same SUB check as a single man. Sure, he might get more from state funds, but he should get more from SUB too." Mr. McRae also thinks benefits should go up with seniority.

His statements about administration, seniority, and large family benefits are typical of complaints that most companies, large or small, make about SUB. Simplified administration would help. So would the chance for older persons and familymen to earn more credit units. Another aim of the UAW is to lengthen payment duration to 39 weeks. It's 26 weeks now, but at American Forging the average payments ran out after 18 weeks because workers hadn't earned enough credits.

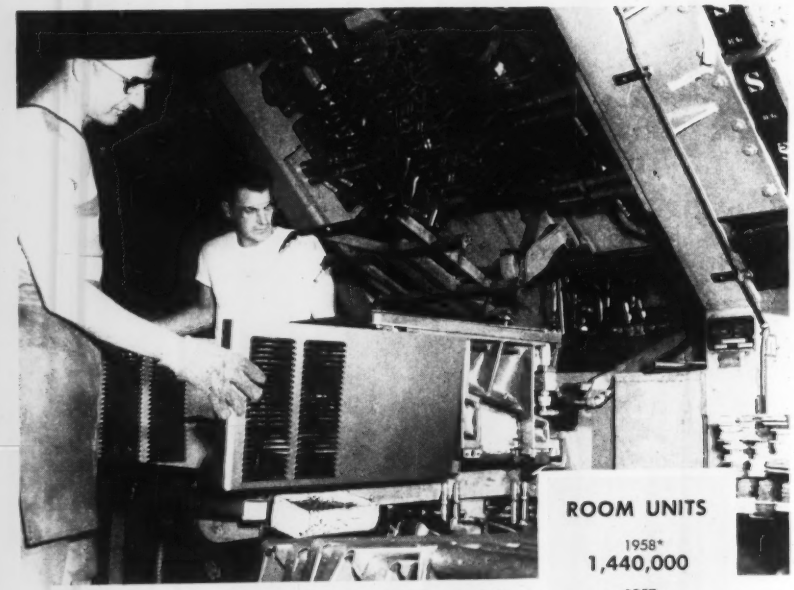
These are the areas the auto companies probably will consider modifying. When funds are at the maximum, the Big Three can afford these changes more easily than a company like American Forging which would have to tack them on to the 5 cents a man per hour it's already paying.

Asserts Mr. McRae, "We aren't going to follow any pattern this year. Our fringe costs are 52 cents now and we can't afford more."

Other Problems—No matter how the Big Three come out with SUB at the contract talks, they'll still have problems in states (like Ohio) where SUB is illegal. Alternate week payments are a stopgap measure, but GM may have found a better solution in its United Rubber Workers contract at the Inland Mfg. Div., Dayton, Ohio.

Inland workers have decided to participate in GM's income security plan. The company still contributes 5 cents a man per hour, but it's credited to each employee's personal account and he can draw from it when idle or the full amount if he leaves or retires.

This last angle is another version of the vesting scheme which is in SUB plans used by glass and rubber workers, and it's something to which the UAW doesn't object. The autoworkers union already has signed a contract containing a SUB vesting clause with City Auto Stamping Co., Toledo, Ohio. Mr. Reuther's boys probably would seek the same deal for autoworkers in Big Three plants in Ohio.



Westinghouse workmen position room unit for welding

ROOM UNITS

1958*	1,440,000
1957	1,586,000
1956	1,780,000
1946	30,000

*Estimated by STEEL.

Air Conditioner Sales Downtrend Continues

WEATHER permitting, sales of room air conditioners next year are expected to be better than this year's and last year's.

Emerson Electric Mfg. Co., St. Louis, predicts its '59 sales will be 60 per cent better than 1957's. Palmer Mfg. Co., Phoenix, Ariz., expects its '59 volume to be 20 per cent above the '57 level.

The Air Conditioning & Refrigeration Institute blames rain and unseasonal coolness for a drop of 12 per cent in 1957 room unit sales from 1956 peaks and the 10 per cent loss expected this year. Steepest declines are in the Midwest.

Central Units Help—The decrease has been partially offset by the stability of the southern and southwestern markets and the continued trend toward central air conditioners. Their sales have held up well so far this year, despite the lag in home starts in early spring. Now that building is on the upsurge, the relaxation of Federal Housing Administration restrictions on air conditoned homes has helped central unit sales.

Competition Strong—Competition in the central air conditioning business is getting stiffer: More producers are entering the business, and sales promotion efforts are being stepped up. Rheem Mfg. Co., Chicago, says competition and a 1957 inventory carryover have forced some prices down a little.

Trane Enters Field—Trane Co., La Crosse, Wis., which once produced only industrial air conditioning systems, has entered the residential market with a line of 2, 3, and 5 ton central units. Its new plant at Clarksville, Tenn., is now in production.

Dual units (those which heat and cool) are losing favor, say Rheem and Carrier Corp.

New Development—A development in central systems is the rise of the gas air conditioner. (A gas flame instead of a motor driven pump compresses the refrigerant.) Production of gas units in 1957 was measured by the hundreds, but Arkla-Servel Co., Evansville, Ind., a subsidiary of Arkansas Louisiana Gas Co., Little Rock, Ark., is producing 40 gas units in the 3½ and 5 ton class per day, and expects production to hit 8000 units this year.

Costs: Comparison Can Help

Exorbitant ones won't shrink by themselves. But even the best management men can't do anything if they don't know what to aim for. Program provides way to find out

SINCE JAN. 1, 1953, more than 500 U. S. foundries have gone out of business—over 100 of them since the beginning of this year. One big reason: Lack of efficient cost cutting practices.

Gray Iron Founders' Society Inc., Cleveland, is trying to do something about this situation. It's pushing a "cost comparison program," which it has sponsored for some 30 years.

How It Works—The society goes on the hypothesis that the regular and systematic comparison of current costs per pound with those of similar foundries in the same geographical district is the best way to discover quickly where costs have drifted out of line.

GIFS sponsors 22 local cost groups from coast to coast. Members send the group consultant (the society has three—one each for the East, Midwest, and West) records of their costs for the preceding period. From those records, the consultant prepares a comparison sheet.

Each foundry's costs per pound for various important items, mold and core overhead percentages, and other significant figures are listed under a code number (company names are not disclosed). The comparison sheets are explained and discussed at group meetings by the consultant.

Comparison of his own with costs of other foundries helps the executive to quickly pinpoint his trouble.

Some Results—Foundrymen are traditionally reluctant to talk about their cost problems, but participants have reported resultant savings ranging from moderate to spectacular.

An Indiana gray iron foundry looked at figures for other foundries in its district and discovered that its indirect labor cost for molding was out of line. Minor changes were made in the flow of work through the molding department and inexpensive facilities were added to aid in handling large molds. Result: Labor costs cut by $52 a day.

A Michigan foundry discovered that its scrap loss and customer returns were too high. Solution: Introduction and development of an intensive educational program among supervisors and employees, regular and systematic scrap analysis and control methods, and more rigid inspection standards.

Says the foundry owner: "As a result of the . . . program, we have managed to sell our product for a price resulting in a pretax profit 43 times greater than that produced before using the service."

A California foundry learned that its labor costs were too high. Solution: When a molder fails to show up, seven men are sent home for the day. Previously, temporary work would have been found for the seven (who are dependent on the molder for their regular jobs).

Where To Look—Labor accounts traditionally for about 50 per cent of a typical foundry's costs. Anything that cuts labor costs will add to profits.

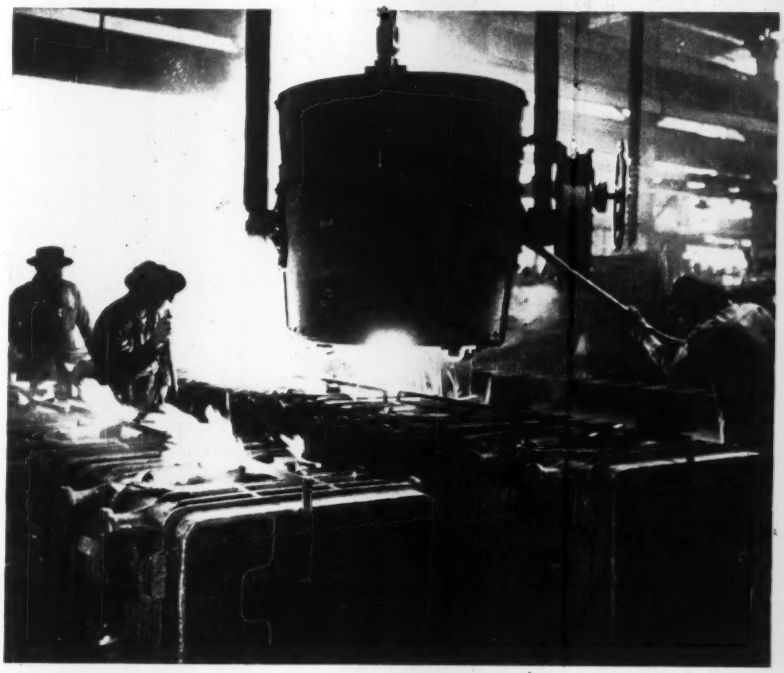
But John L. Carter, one of GIFS' cost consultants, outlines other measures.

He suggests: Establishing realistic production standards by modern methods of time study, motion study, and methods engineering. Follow through by getting production to maintain the standards as closely as possible.

Mr. Carter advises putting incentive systems into effect and revising outmoded piece rates or incentive rates. He stresses the importance of improving layouts in various departments and installing labor-saving equipment.

He adds that costs can be lowered by instituting more adequate and effective control records and procedures, by a more efficient quality control program, and by improving shop discipline.

In any industry, material costs



Foundries save money by comparing their costs with their competitors'

are hard to shave. Look for opportunities in the most fertile areas —labor, time, and efficiency.

Now Is the Time—Mr. Carter believes that a recession provides time to search out ways to cut costs.

GIFS' program is helpful particularly during such a period because:

1. Worker attitude changes. When business is good, and jobs are easy to get, workers resist changes and restrictions. When jobs are more difficult to find, they'll accept cost cutting practices. When business improves, they're used to the new policies.

2. Management (in foundries and other places) is being jolted out of complacency. When profits are good, changes don't appear to be necessary. When there's danger that your firm may be the next to join those already out of business, proposed improvements meet far less opposition.

3. Shop executives have more time to devote to cost reduction projects, and more men are available to work on improvements in layout or installation of new equipment.

4. And Mr. Carter adds: In a recession, it's easier to locate good management personnel if the organization needs strengthening.

Adaptation—Even though GIFS' program has been around for three decades, it seems to be unique. But other industries could use it in principle through their own associations for the same purpose.

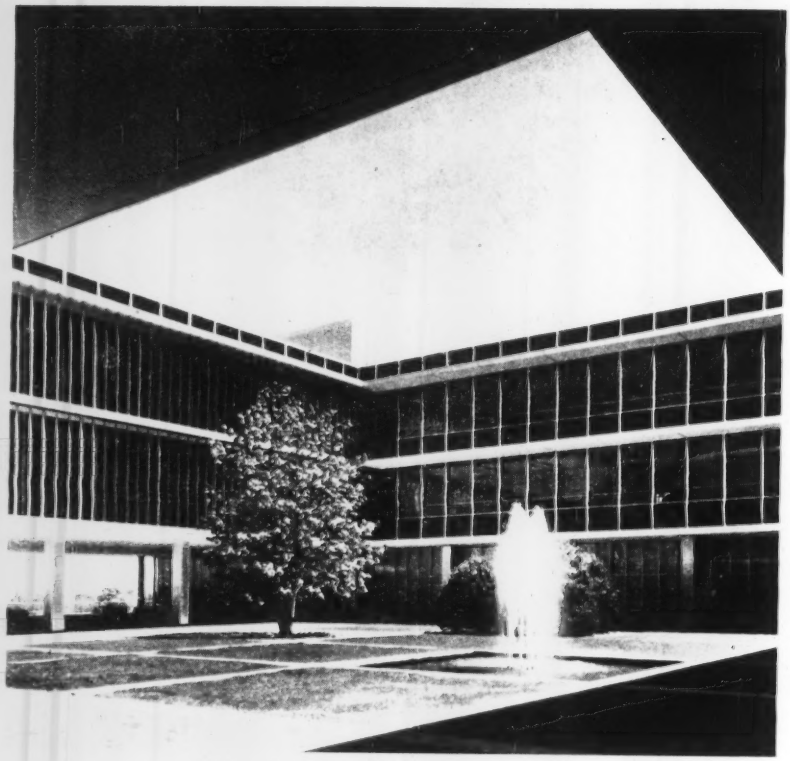
There are many areas where opportunities abound. And there are many ways to trim. But the first step is to find out where you are out of line. Comparison can do it for you.

$6-Million Mill Installed

Pittsburgh Steel Co., Pittsburgh, has completed a $6-million billet mill at its Monessen, Pa., works.

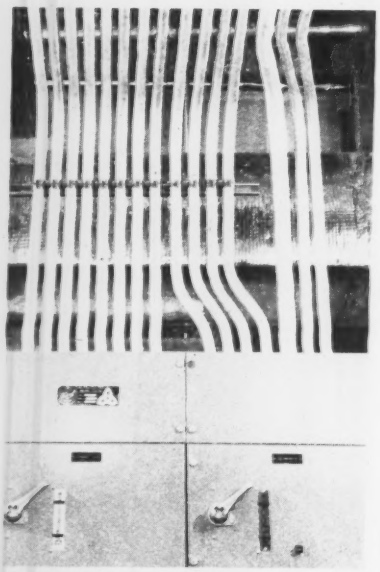
The 6 stand, continuous, 30 in. mill permits greater flexibility of rolling, open hearth melting, and steel handling schedules, while producing higher quantities of higher quality semifinished steel.

It rolls 9 by 10 in. blooms down to 4 in. squares and 4⅝ in. rounds for seamless tube production.



A 40-ft southern magnolia tree and the square grass plots In Reynolds' courtyard carry out the clean angular motif

Reynolds Builds Showplace



Aluminum control panels feed electricity into aluminum bus ducts, cables, conduit

REYNOLDS Metals Co.'s four-story headquarters building in Richmond, Va., was designed not only to provide an attractive home office, but an $11.5-million promotion of aluminum for construction.

Reynolds hopes its use of 1,235,800 lb of aluminum will stimulate architects and builders to incorporate more aluminum when planning new structures.

Aluminum has been applied more than 40 ways in the building. Uses range from major structural forms to decorative fixtures; Reynolds points to these with greatest pride:

- More than 92,000 sq ft of Hexcel honeycomb panels form decorative ceilings on two floors. The ceilings serve as air-conditioning duct enclosures and as air and light diffusers.
- Some 880 sun louvers (each 14 ft high and 22 in. wide) shield the

eastern and western faces of the building, eliminating glare and keeping out solar heat. (Lower air-conditioning expense permits writing off a large part of the investment in louvers.)

- The building's climate is centrally monitored and controlled from a large panel designed in aluminum. Length: 32 ft.

Some offbeat uses: Draperies, carpeting, and food trays made of aluminum yarns (the trays are encased in glass fiber), movable office partitions, and an aluminum irrigation system for the grounds.

Missile Steel Developed

United States Steel Corp. has developed a sheet steel made from an ultra high strength alloy for use in missiles and rockets, says Clifford F. Hood, president.

Called Airsteel X-200, it develops tensile strengths of 280,000 psi after being cooled in the air and tempered.

The new metal is produced in an annealed condition and is air hardened after being formed and welded. Welded joints have proved to be as strong as the parent metal.

U. S. Steel's Research Center in Monroeville, Pa., spent two years on the project and exhaustive fabricability tests have been conducted at the company's Consolidated Western Steel Div., Los Angeles.

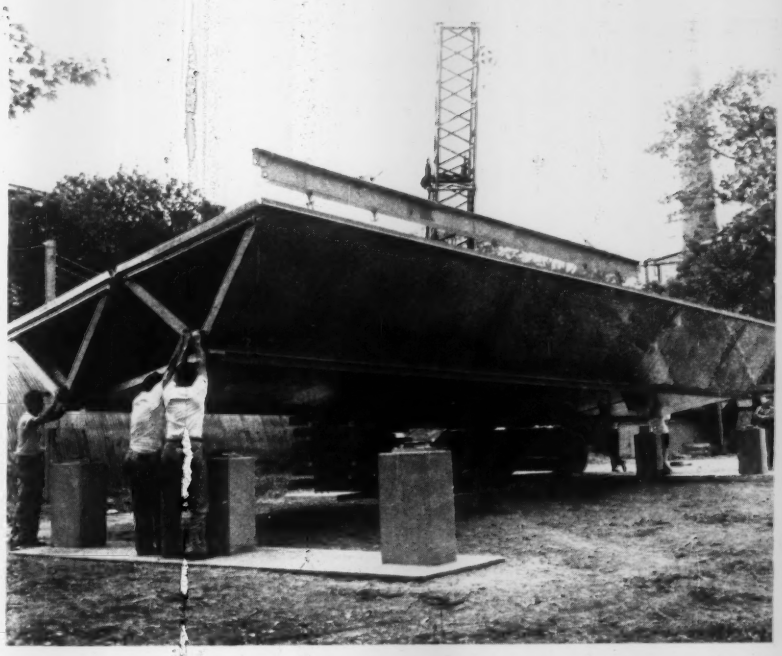
Billets, blooms, bars, plates, and sheets are available.

Maintenance Can Up Flow

Avoiding unanticipated machinery breakdowns through planned maintenance could boost America's output of goods at least 10 per cent, says Karl J. Doll, General Electric Co.'s manufacturing practices manager.

Mr. Doll also says that the trend to automation will make machinery maintenance one of the major sources of new jobs within ten years, due to the dependence of automated machines on other machines.

For conceiving and promoting the philosophy of productive maintenance, Mr. Doll received GE's Coffic Award in 1950, the company's highest citation.



Five men set up test bridge in under two days to prove . . .

Aluminum Bridges Practical

AN ALUMINUM BRIDGE, employing aircraft design principles, was shown Aug. 27 at Lehigh University to engineers, road builders, and state and federal highway officials.

The test structure was designed and built by Fairchild Engine & Airplane Corp. Its sponsors say the new design could mean substantial savings in the cost of the $50-billion federal highway program.

Sponsors of the project include: Fairchild, the Bureau of Public Roads (U. S. Department of Commerce), Aluminum Co. of America, Kaiser Aluminum & Chemical Sales Inc., Metals Div. of Olin Mathieson Chemical Corp., and Reynolds Metals Co.

Description—The Fairchild Aluminum Bridge is of monocoque construction (6061-T6 is used for all applications). The test section consists of three, 50-ft triangular beams made of 0.081-gage, rolled sheets. Extrusions are riveted to the sides of each sheet to stiffen it. The three beams are connected by bolts at the top to form a plate 24 ft wide—the roadway base. A 0.125-gage sheet forms the bottom plate.

A standard concrete roadway, joined to the bridge by shear ties, becomes a composite structural member. The vertical sides of the triangular beams form six canted webs which are the principal shear members. Extruded bulb angle stiffeners are riveted to the webs and bottom plate to assure the buckling integrity of the panels.

The 50-ft section weighs 11,300 lb, excluding roadbed and abutments.

Testing—Lehigh's Department of Civil Engineering was chosen to establish testing criteria, select a test site, and conduct the test sequence. Prof. William J. Eney, director of the school's Fritz Engineering Laboratory, was in charge.

Its Purpose—Assembly and testing of the prototype were undertaken for two reasons: 1. To establish a foundation for specifications by the Bureau of Public Roads. 2. To investigate the feasibility of designing and making an aluminum bridge at a minimum cost and employing aircraft design principles.

Twelve Commandments for a Good Foreman

1. Be consistent in interpreting company policy.
2. Know the basic mechanics of all jobs in the department.
3. Be able to influence people.
4. Be fair to all workers.
5. Be loyal to the company.
6. Co-operate with other departments.
7. Know how operations intermesh.
8. Develop improvements in methods and processes.
9. Encourage workers to improve their methods.
10. Be kind but firm in dealing with subordinates.
11. Be a good housekeeper and control waste.
12. Show good taste in all actions.

Conceived by HARRIS W. BOTRUFF, vice president

Practiced by PAUL D. NELSON, foreman

How To Pick and Train Foremen

PAUL NELSON joined Sealed Power Corp., Muskegon, Mich., in 1954 as a $250-a-month checker. Today, at 25, he supervises 28 workers. Secret of his climb: The company's method of selecting and developing supervisors. It has produced 26 of the firm's 96 supervisors; the rest got their jobs before the system was devised. It features a "manpower pool."

Tests, interviews, and observation are used to see if a man has the necessary qualifications for a foreman. Paul did. A high school graduate, he wanted to be a supervisor. He took pride in his accomplishments, was a good organizer, and accepted criticism graciously. He was a good communicator, could withstand pressure, and never "took the easy way out." He got along well with his fellow workers. He had the "proper management attitude" (interest, initiative, willingness to work extra hours and assume added responsibility). He attended night school and completed a course in accounting; that indicated interest in self-improvement.

His superiors, impressed, referred him to the Salaried Personnel Dept. for interviews and tests (Thurston Temperament, Wonderlic, Adaptability, Minnesota Clerical, How Supervise, and Kuder Preference). He was promoted to experimental follow-up man—after 15 months with the company.

In the Pool—In 1957, he was recommended for the manpower pool. It works this way: Supervisors nominate employees. They're investigated by the salaried personnel director (W. M. Brooks) through interviews, tests (a guide), and observation. Candidates not disqualified at this point take the Premanagement Development Course. In six 2-hour sessions, they learn the purpose of the program, company history, organizational structure, industrial economics, human relations, and the Sealed Power product story. The firm makes piston rings, pistons, and cylinder sleeves. Purpose of the course: To acquaint candidates with management problems and objectives, the necessity of good

profits, and dignity of the individual, and the importance of teamwork.

Harris W. Botruff, vice president-industrial and public relations, emphasizes these four points: 1. Know what kind of man you want before you select one. Will he practice the "12 Commandments"? (see Page 32). 2. Select only men who want to become supervisors; never talk a man into it. 3. Don't accept a man who's concerned about losing union security. 4. Show him that teamwork is needed for success.

Paul did well in the course and was placed in the manpower pool. Candidates are told that, even though they make the pool, they may never be selected to become supervisors. The salaried personnel director counsels them to drop out if they don't think they could accept a decision not in their favor.

Out of the Pool—Sealed Power opened a new branch plant last December. Its manager requested a foreman and the manpower pool was analyzed. Among the candidates qualified for the particular job was Paul Nelson. The branch plant manager conducted interviews and selected Paul for the job. The others were encouraged to improve themselves for future placement.

In Training—Sealed Power's approach: Develop a trainee's strong points first; as he progresses on the job, his weak points will come to light. They can then be overcome one at a time.

The training program includes:

- One to two weeks in each of various departments (including Time Standards and Industrial Relations). Object: Show him how each department relates to his new position.
- Introduction to fellow supervisors and top management. The visit with top officials is a key point of the program. They show that they're sincerely interested in the trainee and offer him their assistance.
- Instruction in state employment laws, the Taft-Hartley Act, and other regulations affecting his job.
- Explanation of the union contract by the labor relations director. Emphasis is on the intent of each clause. He learns his role in grievance procedure and disciplinary action.
- Explanation (by the superintendent) of the factors influencing costs and his responsibility in keeping them low. He's told of the need for employee productivity and good quality work, how to instruct a new worker and how to minimize scrap.

Never Out of Training — Paul has been a supervisor for nine months; two progress checks have shown that he's a good boss. But he still has the opportunity for more training. Sealed Power encourages its foremen to attend university extension courses and junior college night school as well as to enroll in a management development course sponsored by industry in the Muskegon area. Response is good.

Nobody Loses—A man who gets into the pool but never becomes a foreman still profits: He's aware of management's interest in him; he has learned something of how a business is run and the importance of the individual in an integrated operation.

Sealed Power says such a man becomes a loyal teamworker, a good example-setter, and a better informed employee. He can now see management's point of view and defend it in plant discussions.

FREDERIC G. DONNER

JOHN F. GORDON

Donner, Gordon Head GM

HARLOW H. CURTICE has stepped down as president and chief executive officer of General Motors Corp., Detroit. His retirement begins today. Albert Bradley, chairman, will also retire.

GM will divide administrative responsibilities between a financier and an operations executive. The corporation named Frederic G. Donner chairman and chief executive officer. Since Apr. 2, 1956, he has served as executive vice president and chairman of the financial policy committee. STEEL pegged him as a possible successor to Mr. Curtice more than a year ago (STEEL, July 1, 1957, p. 47).

The corporation's new president will also be its chief operating officer. John F. Gordon, elected to those posts, has been vice president and group executive in charge of the Body & Assembly Divisions of GM since Jan. 1, 1951.

New Governing Groups — A finance committee and an executive committee will take the place of the financial policy committee and operations policy committee. They'll map the corporation's financial policies and its business affairs. Mr. Donner will continue as chairman of the finance committee. Mr. Gordon will become chairman of the executive committee.

Are Higher Corporate Taxes Coming?

MOUNTING federal deficits are making the possibility of higher corporate taxes a reality, not just a nightmare for the corporate manager. The one-year extension of the tax at the old rate can't be regarded as a sign that things may get better next year, when Congress again must extend or modify the tax structure—1959 is not an election year. So you may expect economy-minded legislators to take a hard look at government spending, vs. government receipts.

Symptoms of economy mindedness appeared in the closing days of the 85th Congress: The defeat of the half-billion dollar mineral subsidy bill and the housing program, plus the cut in foreign aid funds.

In addition, any reforms in renegotiation and depreciation laws next year to help businessmen may make it easier to boost taxes. A return of the boom years is also counted as helpful to those who want more tax receipts.

Congress has lifted the permanent debt ceiling of the government from $275 billion to $285 billion, and the temporary ceiling (through fiscal 1959) to $288 billion. The deficit for fiscal 1958 is reckoned at $2.9 billion; it will probably hit $12 billion in fiscal 1959. Rep. Wilbur Mills (D., Ark.), head of the Ways & Means Committee, says he doesn't see any drop in the national debt for at least three or four years.

Defense Holds Key

Those figures add up to higher taxes if the 86th Congress listens to claims that we are continuing to fall behind the Russians in our defense effort and if the legislators try to hold the national debt under its new ceiling.

The key act in the drama of the balanced budget began in July with the Lebanon crisis. No longer secrets are: Our woeful lack of air transport to fight a brushfire war and that our Marines still carry World War II rifles. On top of that put Sen. John Kennedy's (D., Mass.) disclosure of the widening gap between Russian and U. S. missile development. So it isn't difficult to forecast heavy debate on the defense issue next year, with the odds in favor of a 1960 defense bill $2 billion higher than the $41 billion to $42 billion to be spent this fiscal year.

There seems to be little danger that any major defense program will be slashed in favor of one particular segment. Advocates for bombers, missiles, aircraft carriers, Polaris firing submarines, and a better equipped Army each have their backers on Capitol Hill. The only effective rein on the defense budget appears to be the White House and Defense Secretary Neil McElroy.

Missile Cutbacks Still Possible

Another aspect of the economy fervor has shown up in the defense secretary's office. Two missiles, the Bomarc and the Snark, may be on the way out. Our only intercontinental (but subsonic) bird, the Snark, on which we have spent about $1 billion, is not slated to be produced in the quantities needed to make it a valuable weapon. (Fleets of Snarks would be fired to insure at least a few getting through to the target.) The Bomarc is being matched with the Nike Hercules—and coming out second best, say Pentagon sources.

Congress may not be able to save either of those projects, but you can be sure the legislators will add money to the budget for others to take their place. Another cutback is possible: The Jupiter. Air Force sources whisper that Mr. McElroy didn't want to make the announcement while Congress was in session.

School Construction Next Year?

Says Sen. James Murray (D., Mont.), chairman, Senate Education Subcommittee: An adequate program of classroom construction will have "high priority" next session. His plan calls for $25 per school-age child to go to the states, with the states deciding whether the money should be used for classrooms or teacher salaries. In the four years of the program, the ante would be raised to $100 per child, increasing at a rate of $25 per year.

In view of the swing to economy, the senator's optimism for his program may be unwarranted, but it might be noted that his intense interest in a mineral program could be traded with northern urban liberals for such a school program.

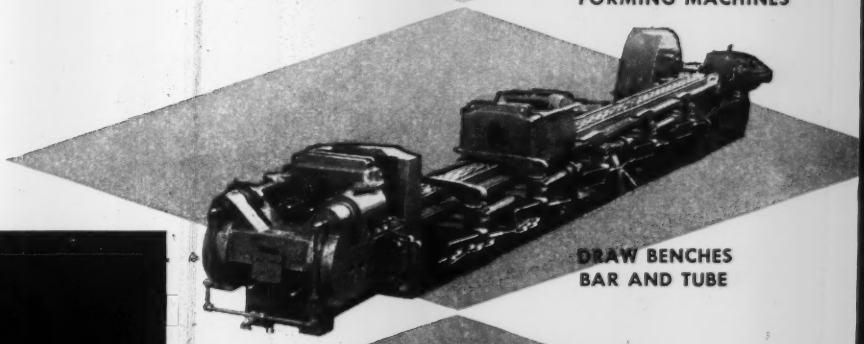
Atomic Objectives Outlined

Economic nuclear power in the U. S. by 1970: That's the goal of Rep. Carl Durham (D., N. C.) and Sen. Clinton Anderson (D., N. Mex.), heads of the Joint Atomic Energy Committee. Based on discussion with the Atomic Energy Commission and a panel of industry advisers, present plans will meet the goal, say the two legislators.

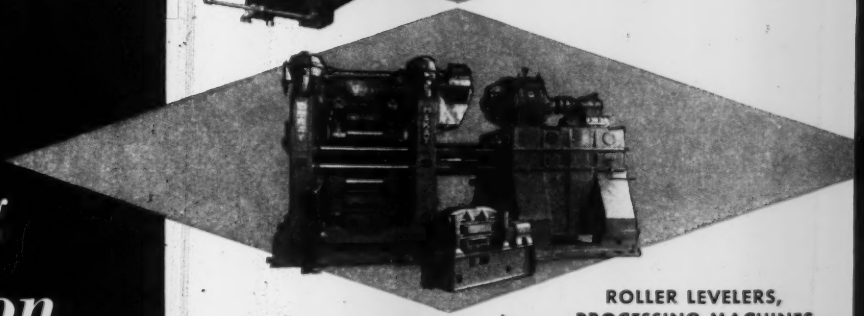
Design studies (through 1965) of 21 reactor plants of many types form the first step of the program. Half of the most promising designs will be built. Capacity of the U. S. plants will run about 1 million kw.

The AEC will finance most of the research and development; construction will be government and industry sponsored.

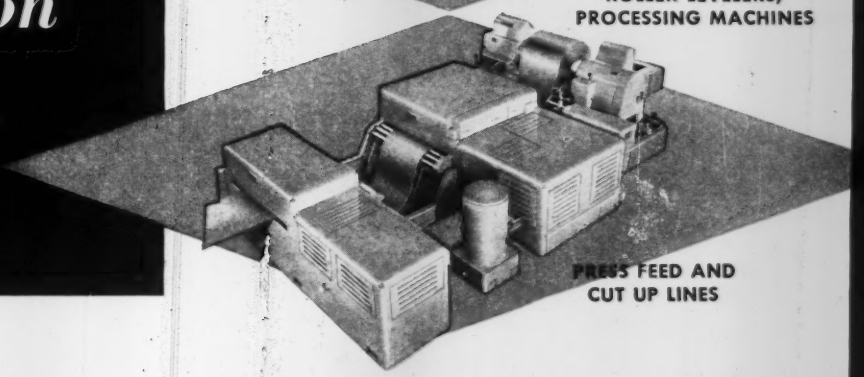
TUBE MILLS AND
FORMING MACHINES



DRAW BENCHES
BAR AND TUBE



ROLLER LEVELERS,
PROCESSING MACHINES



PRESS FEED AND
CUT UP LINES

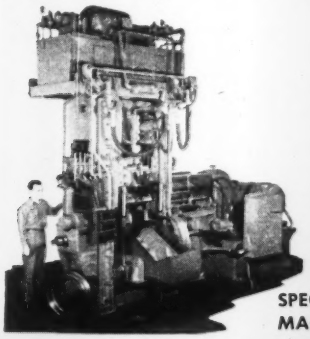
Metal working Automation in action...

If you're in the metal working business, you should be acquainted with McKay *automated* lines available for many metal working operations.

McKay pioneered and has played a leading role in the development of such equipment as that pictured on this page.

Basic McKay designs can be modified, or special machines developed to meet specific requirements.

THE McKAY MACHINE CO., YOUNGSTOWN, OHIO



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high radial and shock capacity

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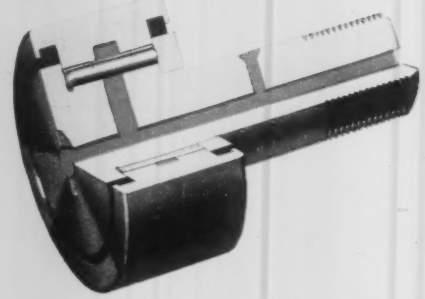

Effective sealing of the CAMROL cam follower against moisture, dirt, chips, etc. guarantees longer service life . . . reduces maintenance. This sealed construction retains lubricant and eliminates need for frequent relubrication, so often undesirable in cam action, guide support and track roller applications.

Special seals are built in at stud and flange ends. A black oxide finish on all exposed surfaces offers outside corrosion resistance. The channeled reservoir above the rollers in the outer raceway bore helps store reserve lubricant, sufficient in most cases for lifetime service. Relubrication is possible through convenient oil holes. The new SCF sealed CAMROL cam followers interchange with proven standard CAMROL cam followers. Standard stock with roll diameters up to 4″ are available for both stud and shaft mounting.

For maximum bearing life where contamination is a problem, specify sealed CAMROL cam followers. Ask your McGill representative or our engineering department for recommendations.

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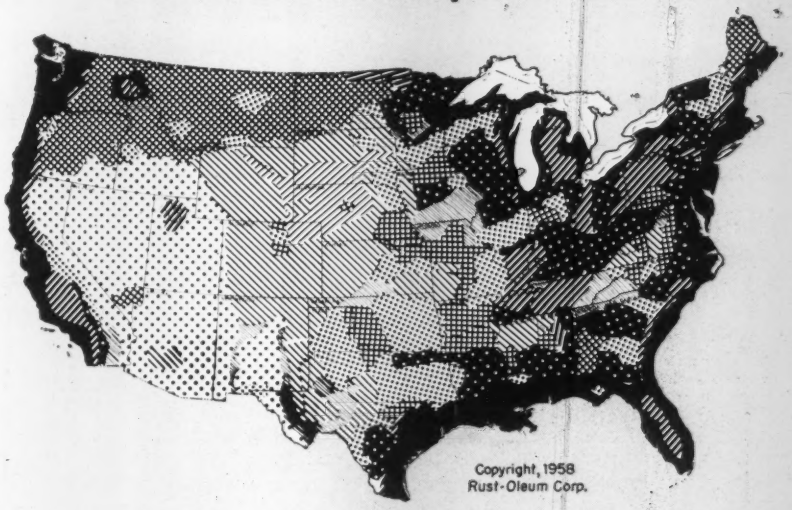
Corrosion Map of U. S.



Number of Years and Months Required to Severely Corrode an Uncoated 28-Gage Steel Panel:

3.00 — 3.11	6.00 — 6.11	9.00 — 9.11
4.00 — 4.11	7.00 — 7.11	10.00 — 14.11
5.00 — 5.11	8.00 — 8.11	15.00+

Rust Rates of Major Cities

(Basis: Years and months needed to severely corrode a 28-gage steel panel.)

Buffalo	3.00
New Orleans	3.01
Pittsburgh	3.01
Los Angeles	3.02
Cleveland	3.03
Portland, Oreg.	3.04
Providence, R. I.	3.04
Chicago	3.05
Seattle	3.05
Milwaukee	3.05
New York	3.06
Detroit	3.08
Philadelphia	3.08
St. Louis	3.10
Bridgeport, Conn.	3.11
Peoria, Ill.	4.03
Cincinnati	4.11
Dallas	6.10
Denver	7.02
Tucson, Ariz.	15+

Sulfuric Acid in the Air

That's one reason why steel rusts faster in urban areas than rural, reports Rust-Oleum Corp. It has just finished 25 years of research on rust rates throughout the U.S.

THE NATION'S rust bill is now $7.5 billion annually—up $2 billion from a decade ago, estimates Rust-Oleum Corp., Evanston, Ill. The firm, a producer of rust-resistant coatings, has just completed a quarter century of research on the rate of corrosion in all U. S. cities of 10,000 population and over.

Steel corrodes fastest in Erie, Pa.; Miami, Fla.; Buffalo, and Rochester, N. Y., Rust-Oleum reports. Slowest rust rates were found in Tucson, Ariz., Sante Fe and Roswell, N. Mex.

City Vs. Farm—Metal corrodes faster in urban areas than rural due to industrial fumes—mainly gaseous compounds of sulfur. When dissolved in water, they form sulfurous and sulfuric acids. So rain, dew, and fog in industrial areas become weak acids. Other corrosive elements include chlorides, cinders, fly ash, and chemical dusts. Marine atmospheres accelerate corrosion because of the salt and high humidity.

Rust Is Waste—Rust-Oleum estimates that corrosion costs the nation's railroads $500 million yearly, the U. S. Navy, $100 million. Annual cost to farmers is $300 million—an average of $480 per farmer. Damage to cables, pipes, and foundations amounts to $1 billion each year.

How To Stop It—Rust-Oleum suggests three ways to protect metals against corrosion: 1. Change the environment—only possible indoors. 2. Modify by alloying. 3. Apply a protective coating to insulate from the environment.

About the Study—To gather the data for Rust - Oleum's map (above), salesmen set up 28 gage, low carbon steel test panels at plant sites across the country. They were dated, left exposed, examined later. The number of years and months it took for the panels to severely corrode is used as the index.

Big Cities Fare Worse—Of the 523 cities indexed by Rust-Oleum, 221 (42 per cent) are in Class I (test panels rusted in less than four years). All major industrial areas and most secondary ones are in that group.

Class II cities (where panels rusted in four to five years) number 95.

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service,* STEEL, *Penton Bldg., Cleveland 13, Ohio.*

EXECUTIVE COMPENSATION in the Iron and Steel Industry

(Average total compensation of chief executive officers)

BY COMPANY PROFIT LEVELS	1955	1956	1957
$3 Million	$66,000	$80,000	$86,000
Average for 18 Industries	$71,500	$76,000	$78,000
$10 Million	$108,000	$123,000	$125,000
Average for 18 Industries	$102,000	$108,000	$108,000
$40 Million	$188,000	$202,000	$192,000
Average for 18 Industries	$155,700	$164,000	$160,000

Source: McKinsey & Co.

Survey of 18 industries shows . . .

Executive Compensation Highest in Iron and Steel Industry

Average for top rank $186,000 in '57, vs. $194,000 in '56. Ferrous firms rank third in percentage return on total assets and sixth in percentage of profit to sales

THE AVERAGE top executive in the iron and steel industry made less money last year than he did in 1956, even though the industry chalked up higher sales, bigger profits, and increased assets (see table above.)

Those are findings of McKinsey & Co., New York management consultant firm, which studied operations of 29 iron and steel companies as part of an 18-industry survey covering 642 firms (see table for comparison of iron and steel with other industries).

The survey revealed that the average chief executive in the iron and steel industry received total compensation of $186,000, down 4.3 per cent from the $194,000 paid him in 1956. Frank M. Thompson, McKinsey consultant, reports that the average for the other 17 industries was $108,000.

Why Less?—Why should compensation fall at a time that industry profits rose 4.5 per cent? One answer: The big gains in profits came from a handful of companies (73 per cent of the iron and steel firms surveyed had lower profits last year). Another reason: Two of the four largest producers reported substantial profit increases, but didn't hike compensation at the top. In fact, one reduced its chief executive's remuneration (probably because a new man took over and didn't start at as high a figure as his predecessor).

Where They Rank—At the $3 million profit mark, iron and steel top executives ranked fourth among the 18 industry groups, being bested by department stores, textiles, and auto partmakers. At $10 million, they were third (behind department stores and textiles), and at $30 million, also third (topped by department stores and tobacco companies).

Other Executives—Median com-

pensation for the No. 2 executive in iron and steel last year was 68 per cent of his superior's pay, compared with a median figure of 69 per cent for all 18 industries, says Mr. Thompson. For the No. 3 man, it was 54 per cent in iron and steel, vs. 57 per cent in the other groups. In cash, the No. 2 iron and steel man received $130,000, compared with the 18-industry average of $78,000; the No. 3 man, $104,000, vs. $66,000.

Extras—Supplemental benefits are rising. The number of iron and steel companies granting executives deferred contingent compensation jumped from 33 per cent in 1956 to 45 per cent last year. Stock options are offered executives of 72 per cent of the iron and steel companies (vs. 71 per cent in 1956). All 29 iron and steel companies have pension plans. Comparison: Of the entire 642 companies polled, 33 per cent have deferred contingent compensation, 59 per cent offer stock options, and 90 per cent have pension plans.

Bluecollars — Nonsupervisory workers in iron and steel make more than their counterparts in the other industries surveyed. Their annual gross earnings last year averaged an estimated $5429, almost $1000 over the 18-industry average of $4445, says Mr. Thompson.

Sales and Profits—The iron and steel industry hiked its sales last year 3.2 per cent (see table), but the 18-industry average increase was 5.3 per cent (dropping iron and steel to fourteenth place). Only 36 per cent of the iron and steel companies improved their sales (64 per cent had a drop) but among those were most of the leaders.

The industry's best showing was in net profits which rose even though the all-industry average dropped below 1956 (see table). This boosted iron and steel from fifteenth to fourth place in the survey. Again, the profit figure is not typical of all iron and steel firms. Only 27 per cent had higher profits (73 per cent reported reduced profits, none had a loss), and these were mainly larger firms, which brought up the average, explains Mr. Thompson.

Most encouraging was that percentage of profit to sales climbed to 7.4 per cent while the 18-industry average dropped to 6.4 per cent. This boosted iron and steel from eighth to sixth place. In 1956, iron and steel pulled down 7.3 per cent, vs. weighted figures of 6.9 per cent for all.

Assets Up, Too — Total assets climbed also (see table). Breakdown: 50 per cent of the iron and steel firms reported increases, 45 per cent reported reductions, 5 per cent reported no change. In 1956, 92 per cent reported increases, only 8 per cent decreases.

Percentage return on assets fell to 8.2 from 8.4. But the survey average dropped even farther, from 7.2 to 6.8 per cent. This moved iron and steel from sixth to third position.

Comparison of Sales, Assets, and Profits

Average percentage changes in 1957 over 1956	IRON & STEEL	ALL INDUSTRIES
SALES	**+3.2%**	**+5.3%**
PROFITS (after taxes)	**+4.5**	**−3.2**
TOTAL ASSETS	**+6.2**	**+6.3**

18 INDUSTRIES SURVEYED	% PROFIT TO SALES 1956	% PROFIT TO SALES 1957	% RETURN ON TOTAL ASSETS 1956	% RETURN ON TOTAL ASSETS 1957
Utilities	14.2%	13.9%	3.3%	3.6%
Chemicals	10.6	10.2	9.9	9.3
Petroleum	10.8	10.2	9.1	8.6
Nonferrous Metals	12.6	9.3	10.6	6.6
Building Trade	8.9	8.0	9.3	7.7
IRON AND STEEL	**7.3**	**7.4**	**8.4**	**8.2**
Paper	8.6	7.3	9.6	7.5
Railroads	8.3	6.9	2.8	2.3
Tobacco	5.1	5.2	6.5	7.0
Machinery—Heavy	5.4	5.1	6.5	6.1
Machinery—Light	5.4	4.9	7.8	6.7
Electrical Equipment	4.0	4.4	5.9	6.8
Automotive Parts Manufacture	4.7	4.3	7.5	7.2
Textiles	3.8	3.0	4.0	3.1
Aircraft Manufacturing	3.3	2.9	8.3	7.8
Retail Trade	3.0	2.9	8.2	8.2
Retail Trade Department Stores	3.0	2.8	5.7	5.4
Food and Beverages	2.4	2.3	6.4	6.1
Weighted Average of 18 Industries	**6.9**	**6.4**	**7.2**	**6.8**

Source: McKinsey & Co.
Ranked according to 1957 % profit to sales.

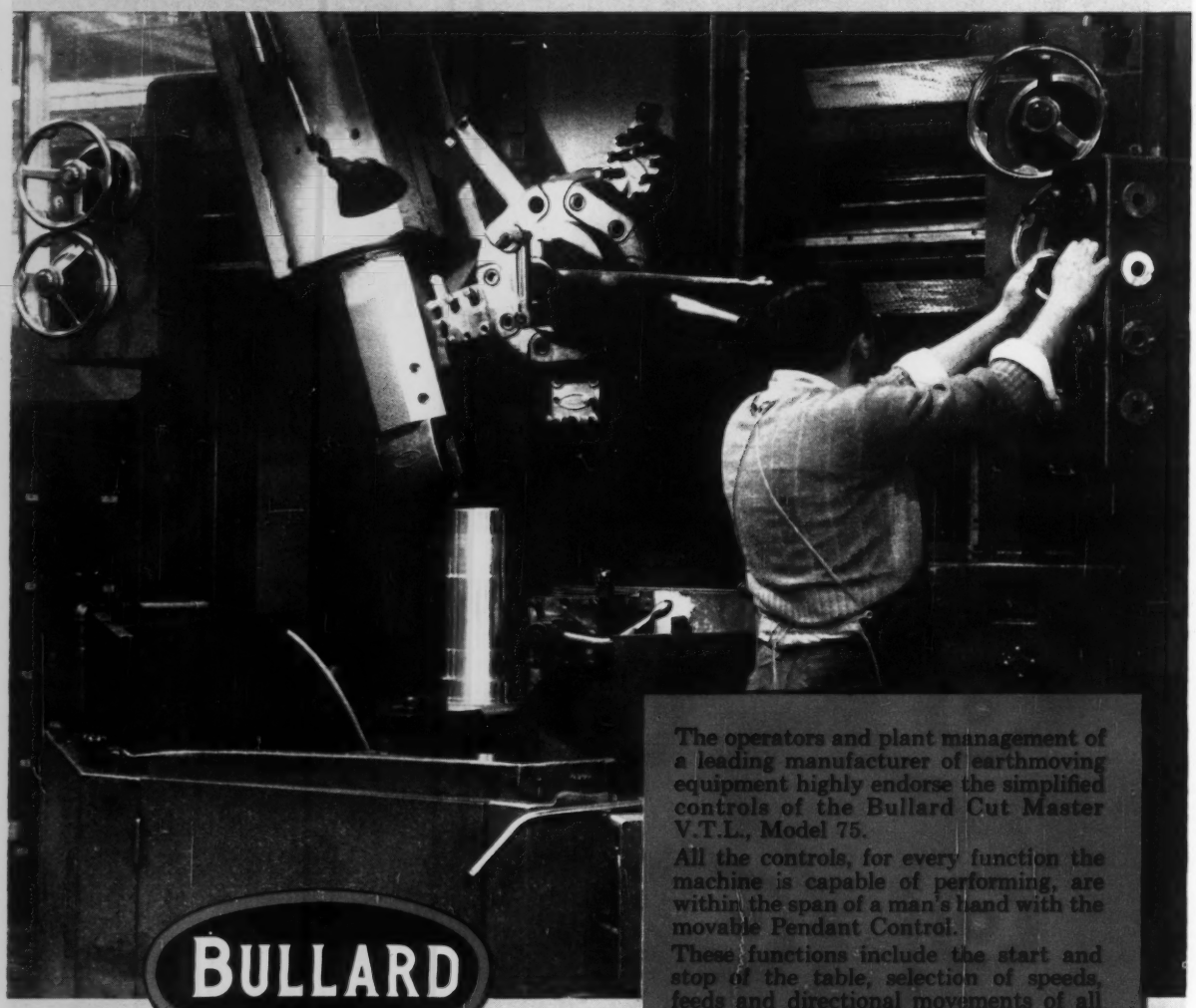
Bolster Sales Staffs

If hard selling can stop the decline in machine tool sales, you should see an uptrend soon. Marketers say they've increased their sales forces in the past year and plan to bolster them 9 per cent more.

A survey by American Machine Tool Distributors Association, Philadelphia, shows that 84 per cent of distributors have the same or more outside sales engineers than they had in 1957. The ratio of administrative personnel to sales engineers is declining. In June, last year, an average of six employees at headquarters served eight sales engineers. Now six administrative workers serve an average of nine sales engineers.

AMTDA officers predict further acceleration of these trends, as sales are well below 1957 levels.

Simplified Controls win enthusiastic approval



The operators and plant management of a leading manufacturer of earthmoving equipment highly endorse the simplified controls of the Bullard Cut Master V.T.L., Model 75.

All the controls, for every function the machine is capable of performing, are within the span of a man's hand with the movable Pendant Control.

These functions include the start and stop of the table, selection of speeds, feeds and directional movements of all heads in feed or traverse.

This feature, a Bullard exclusive, improves the efficiency of the operator and increases production.

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Outlook for Nonferrous Metals in Autos

	FUTURE USE	CONSUMPTION* 1959	1958
		(millions of pounds)	
Copper & Brass	Steady	230	206
Zinc	Holding Its Own	325	279
Magnesium	Retarded	27.5	23.6
Aluminum	Still Growing	285	215

*Estimated by STEEL and based on avg lb/car for 5 million unit output in 1959. Figures include scrap, but exclude replacement parts and special accessories.

Producers Vie for Markets

Aluminum is out front at moment, but may find further success harder to attain. Others are digging in, seeking to hold on to gains they have made

THE GAINS of the aluminum industry have put other nonferrous producers on the defensive where autos are concerned. They're taking steps to hold on to established auto markets. With the exception of aluminum, nonferrous metals share a common future—their use in automobiles is expected to increase only as the number of cars produced grows annually.

Copper and Brass

Copper and its alloys most commonly are used in automotive electrical systems and for bearings, bushings, and a host of small parts. Almost all are vital: Consequently, copper, brass, and bronze have a built-in auto market.

The Copper & Brass Research Association, New York, indicates that as more headlights and electrical accessories are added to cars, markets for its members will expand. Possible applications of copper per car in '58 and '59 are estimated as high as 87 lb; the average, 48 lb.

On that basis, the auto industry will use some 206 million lb this year, excluding replacement parts. If 1959 output hits 5 million cars, copper consumption will be about 230 million lb. About 293 million lb were consumed last year.

Ford Shifts—Radiators use about 18 lb of copper and brass. Adoption of aluminum top and bottom tanks on some Ford lines and the development of an inexpensive aluminum oil cooler will result in a sizable reduction in sales by copper firms.

So far, fabricating an all-aluminum radiator has been difficult. The cost differential is not enough to promote wholesale changes. But experiments with ultrasonic welding (which eliminates the electrolytic corrosion hazard) are giving proponents of aluminum a basis for predictions that the lighter radiator will be in general use by 1965. Carbuilders aren't that convinced, but several engineers admit they'll use aluminum radiators if costs and quality are equal.

Zinc Fights Back

Zinc diecastings can hold their own in the auto field, but not with-

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out a fight. In 1956, Maurice Garwood, Chrysler's materials manager, said he thought auto use of zinc diecastings was near its peak.

In 1957, the American Zinc Institute Inc., New York, figured the average weight of zinc diecastings in a car was 65 lb. Apparently, there hasn't been too much change in 1958. On the basis of production estimates, 279 million lb of zinc diecastings will be used this year and 325 million lb in 1959, again excluding replacement parts and dealer accessories.

Will Fight—John Kimberley, executive vice president of the zinc institute, says: "We're a pretty conservative industry so we aren't going to make a lot of wild predictions about how much zinc will be used on cars, but we are going to work to maintain the share of the market we now have!" To accomplish this, the institute has stationed a man in Detroit to plug zinc.

The institute says: Zinc is easy to diecast and has little surface porosity (which helps in plating and painting). The material is a natural for items like instrument panel clusters, intricate light assemblies, and trim ornaments. It's also used for knobs, arms, and handles, but it has lost out in heavy parts like grilles.

This year Buick, Edsel, Mercury, and some Pontiacs and Ramblers have zinc diecast grilles, but most other car divisions are going to aluminum.

Zincmen plan two steps: 1. Start a search for ways to cut costs on the parts it now has. 2. Build a bigger volume in the extra accessory parts market.

Magnesium: Lost on the Turn

Almost all functional auto parts now made of aluminum or zinc also have been made successfully in magnesium. But magnesium has a long way to go to catch up.

"We're about 20 years behind the aluminum industry when it comes to automobiles," says William Cable of Dow Chemical Co.'s Magnesium Div. Magnesium hit its automotive peak in 1956 when 18 parts were used on Detroit products. This year, only half a dozen remain. Largest is a 3.6-lb window lift on two Chrysler lines. Others include a steering column bracket, main bearing oil seals, and defroster vent outlets.

Costly—Price is one reason for the decline. Even though magnesium is lighter, secondary aluminum and diecast zinc have a slight cost advantage on most parts. This may be overcome on some applications, Dow claims, because magnesium machining costs are lower (by as much as one-third) than those for aluminum.

More important, there's talk that Dow is close to a breakthrough on finding a cheaper way to extract magnesium from sea water.

The Volkswagen uses 36 lb of magnesium castings, including the crankcase and transmission housing. Those are parts Dow would like to see on American-built cars. But first, it would seem that the industry will have to reduce its base price and re-educate auto engineers who just now are becoming convinced aluminum is here to stay.

Aluminum: Why It's Successful

It's obvious that aluminum is the star in this nonferrous drama. Since there was no place to go but up, the aluminum people dug in and sold carbuilders on the advantages of the light metal that's easy to machine, takes a variety of finishes, and can be diecast, stamped, extruded, or forged.

In 1956, the average amount of aluminum per car was 35.2 lb. Next year, it will be around 57 lb, says Kaiser Aluminum & Chemical Sales Inc., Chicago.

Reynolds Metals Co., Richmond, Va., says that every type of aluminum fabrication will be found on 1959 cars. The molten metal contracts General Motors and Ford have with Reynolds are evidence that the industry plans to use even greater quantities in the next decade. The aluminum engine is expected to up consumption by 1961.

No Snap—But there are signs that aluminum's future may not be as smooth as it has been. Auto engineers now are familiar enough with the metal to demand more in the way of finishes and quality.

The 1959 Cadillac sports a small ornament made from bright finish Swedish aluminum. Fred Arnold, Cadillac's chief engineer, says: "We'll use more of this kind of aluminum if we can get it." Domestic producers haven't been able to match the finish at costs as low as those in Sweden.

Irked—More important to aluminum's nonferrous competitors are signs that the united assault on Detroit by Kaiser, Reynolds, and Alcoa is wearing thin. It makes no difference to them who comes up with new uses as long as automakers remain sold on aluminum.

Now aluminum is accepted. Observers think it will be psychologically difficult to keep the one-for-all and all-for-one approach.

U. S. Auto Output

Passenger Only

	1958	1957
January	489,357	642,090
February	392,112	571,098
March	357,049	578,826
April	316,503	549,239
May	349,474	531,365
June	337,355	500,271
July	321,053	495,628
7 Mo. Total	2,562,903	3,868,517
August		524,354
September		284,265
October		327,362
November		578,601
December		534,714
Total		6,117,814
Week Ended	**1958**	**1957**
July 26	85,519	119,857
Aug. 2	62,846	119,323
Aug. 9	65,614	118,864
Aug. 16	59,677	117,598
Aug. 23	25,925†	123,130
Aug. 30	30,000*	118,563

Source: *Ward's Automotive Reports.*
†Preliminary. *Estimated by STEEL.

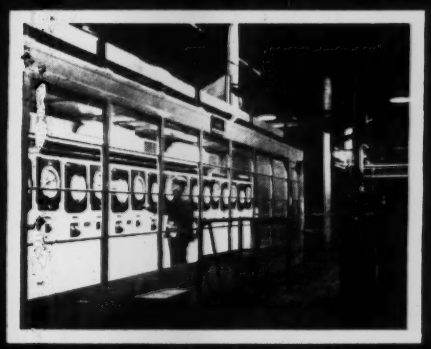
Score on '58 Output

Preliminary counting shows 4,280,217 cars were built during the 1958 model run, compared with 6,212,291 during last year's run.

November was the peak month; 578,720 cars were turned out. After matching 1957 production for September, October, and November, production began to slump. Autobuilding topped 500,000 units in only two months, November and December. Contrast: Yield was better than half a million cars for each of nine months in 1957.

American Motors Corp. was the only firm to better its 1957 output of 99,209 cars. It made 162,182 cars to establish a company record. Chevrolet edged past Ford as the No. 1 volume car. Plymouth stayed in third place.

ARISTOLOY



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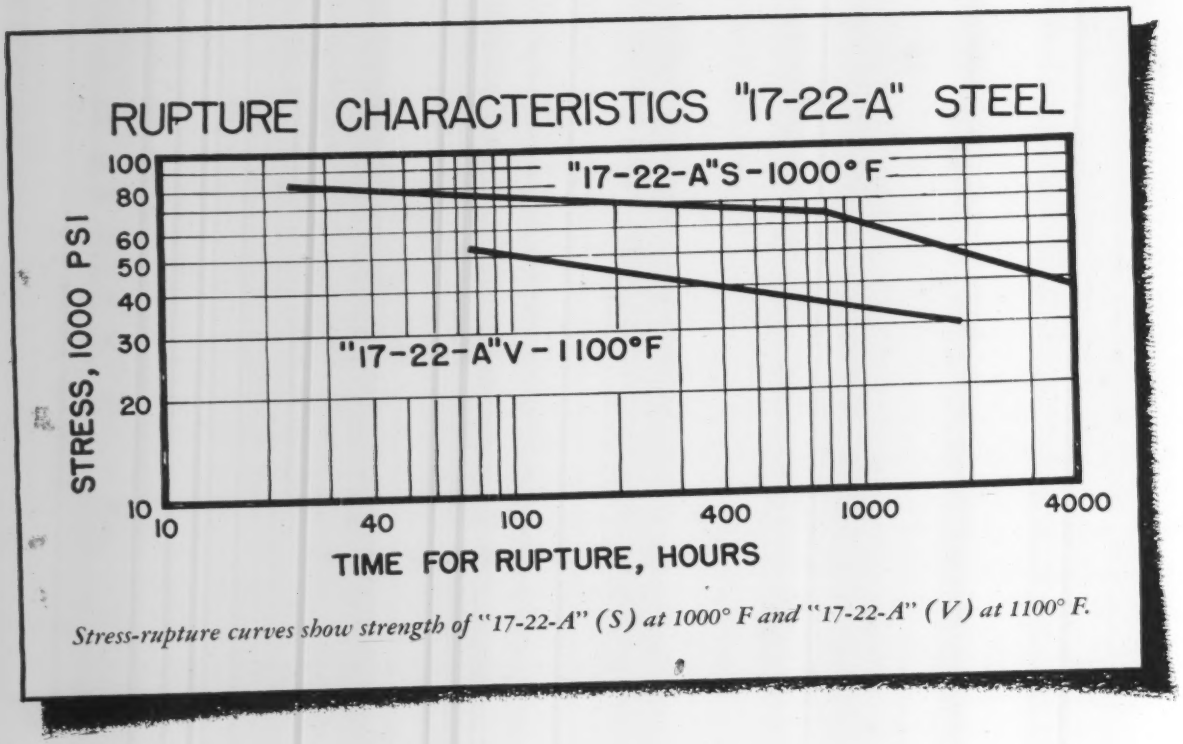
AMERICAN STEEL WAREHOUSE ASS'N



Stress-rupture curves show strength of "17-22-A" (S) at 1000° F and "17-22-A" (V) at 1100° F.

How to solve high temperature parts problems with low alloy steels

HERE'S how you can solve the problem of using expensive, high alloy steels for missile engine parts, airplane brakes, gas turbines or other units that must operate at high temperatures. You can use the Timken Company's *low* alloy "17-22-A"® steels. They contain less than 3% alloy. Yet they give *high* alloy performance—with maximum strength up to 1100° F. You save strategic alloys, cut your costs.

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Get full details about "17-22-A"(S) steel, and its companion analysis, "17-22-A"(V), recommended for temperatures up to 1400° F. Send for Technical Bulletin 36B. And let our technical staff help you, as they've helped others, solve high temperature steel problems. Write: The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable: "TIMROSCO".

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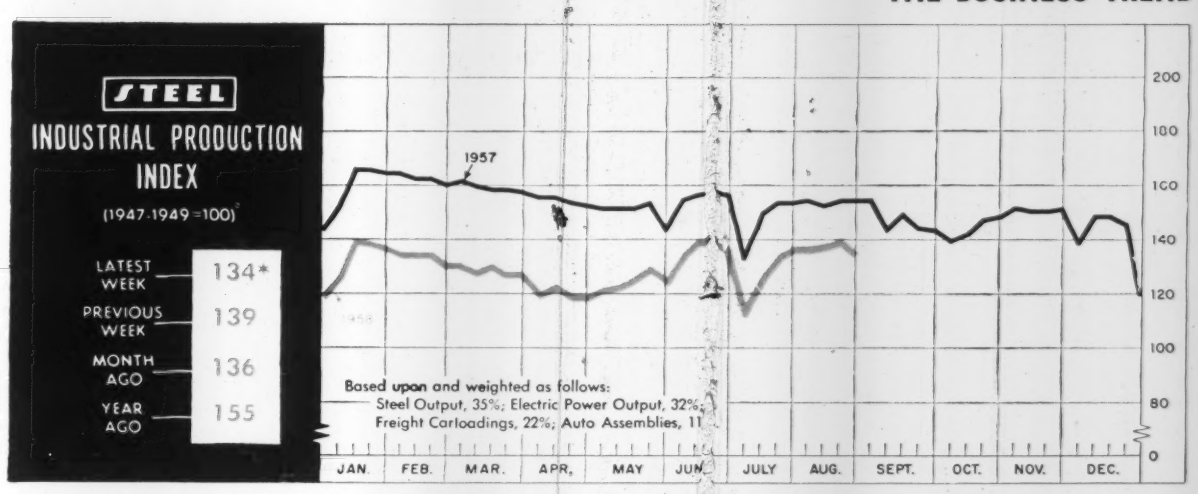

*Week ended Aug. 23.

Recovery To Hit Peak in Fourth Quarter

INDUSTRIAL PRODUCTION is basically stronger than it has been at any time this year despite the temporary decline in STEEL's index (above). Unless a major automotive strike comes this fall, the improvement will be steady throughout the remainder of 1958 and into 1959.

Before being abnormally depressed by an almost complete halt of auto operations for model changeovers, the index equaled the year's high point of 139 (1947-49=100) for the week ended Aug. 16. The preliminary reading of 134 for the latest week reflects the phaseout of '58 model production at Chevrolet Div. of General Motors Corp. The other three elements of the index—steel production, power output, and freight carloadings—showed minor fluctuations common at this season.

Union Troubles—Early production of '59 models is running into labor troubles which are clouding the short term outlook. Each of the Big Three has had walkouts which have hampered the buildup of parts.

If labor difficulties can be minimized, final assembly of cars should start to pick up this week and build up to the highest level of the year within the next four to six weeks. During the fourth quarter, the industry usually accounts for between 15 and 20 points of the total index. Last week, it accounted for only 4.

Hand in Hand—As auto production increases, so will steel output. Although auto buyers are being cautious because of a potential strike, the steelmakers geared production at about 63.5 per cent of capacity for the week ended Aug. 31, the eighth straight weekly increase. At 1,715,000 net tons, it is nearing the high mark for the year.

If the auto market loosens up this month, the much heralded recovery of steelmaking to 75 per cent of capacity will be well on its way. If that goal is reached, it will add about 8 points to the index.

Electricity Off—Along with steel,

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	1,717[1]	1,690	2,103
Electric Power Distributed (million kw-hr)	12,600[1]	12,851	12,023
Bituminous Coal Output (1000 tons)	8,100[1]	7,890	9,570
Crude Oil Production (daily avg—1000 bbl)	6,830[1]	6,839	6,788
Construction Volume (*ENR*—millions)	$373.0	$336.9	$257.4
Auto, Truck Output, U. S., Canada (*Ward's*)	38,088[1]	75,687	149,866
TRADE			
Freight Carloadings (1000 cars)	625[1]	626	758
Business Failures (Dun & Bradstreet)	262	290	222
Currency in Circulation (millions)[3]	$31,295	$31,291	$31,055
Dept. Store Sales (changes from year ago)[4]	+2%	+1%	+4%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$22,688	$21,243	$21,835
Federal Gross Debt (billions)	$278.2	$278.0	$271.4
Bond Volume, NYSE (millions)	$24.1	$24.1	$17.0
Stocks Sales, NYSE (thousands of shares)	12,270	14,622	9,922
Loans and Investments (billions)[4]	$94.9	$95.5	$85.7
U. S. Govt. Obligations Held (billions)[4]	$33.7	$34.2	$24.6
PRICES			
STEEL's Finished Steel Price Index[5]	246.65	246.65	239.15
STEEL's Nonferrous Metal Price Index[6]	198.4	198.1	213.8
All Commodities[7]	118.8	119.0	118.0
Commodities Other than Farm & Foods[7]	125.9	126.0	125.7

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1958, 2,699,173; 1957, 2,559,490. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-39=100. [6]1936-39=100. [7]Bureau of Labor Statistics Index, 1947-49=100.

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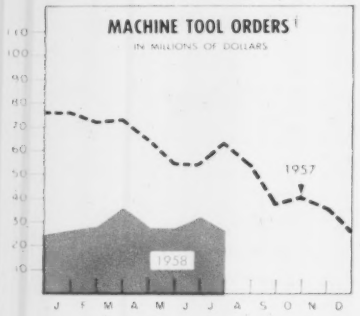
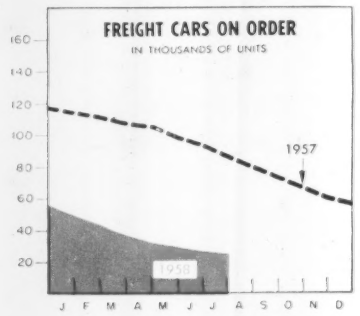
The Metalworking Weekly

THE BUSINESS TREND





	New Orders 1958	New Orders 1957	Shipments 1958	Shipments 1957
Jan.	26,850	75,500	57,800	99,900
Feb.	28,300	71,900	48,050	103,350
Mar.	36,150	72,750	54,150	115,600
Apr.	28,300	64,300	50,900	110,650
May	28,050	53,650	50,100	104,300
June	32,100	52,800	45,500	106,950
July	26,900•	62,650	29,650•	81,450
Aug.	.....	52,900	.....	78,300
Sept.	.....	36,750	.....	82,050
Oct.	.....	39,700	.....	76,050
Nov.	.....	35,150	.....	59,750
Dec.	.....	24,850	.....	70,100
Totals	.....	642,900	.....	1,088,450

†Metalcutting and metal forming.
•Preliminary.
National Machine Tool Builders' Assn.

	Awards 1958	Awards 1957	Backlogs (end of month) 1958	Backlogs (end of month) 1957
Jan.	401	5,328	48,787	114,656
Feb.	294	6,065	43,750	111,965
Mar.	239	5,359	38,027	107,708
Apr.	278	6,429	32,908	105,190
May	1,372	3,423	30,386	97,006
June	317	4,918	27,757	91,810
July	376	1,251	25,994	85,229
Aug.	.....	3,203	.....	79,258
Sept.	.....	3,257	.....	71,981
Oct.	.....	2,206	.....	65,718
Nov.	.....	1,070	.....	59,194
Dec.	.....	3,492	.....	55,941
Total	.....	42,051		

American Railway Car Institute.

Charts copyright, 1958, STEEL.

the biggest plus in production since July 4 has been electric power generation. After setting an all-time high of 12.851 billion kw-hr during the week ended Aug. 16, chilly weather over the Midwest was expected to cut into air conditioning use of electricity. This will start a seasonal downtrend in this industry which probably will extend into October or November. Then heavy industrial production will reverse the trend.

Freight carloadings should remain about as they are—in the 600,000 to 650,000 car range—until the Great Lakes ore season closes. It could come earlier than usual this year in view of the comparatively large stocks of ore on the docks or at the plants. A decline of almost 100,000 cars a week will result, part of which will be made up by an anticipated increase in larger miscellaneous shipments as manufacturing industries speed up in the fourth quarter.

Summary—The net result could be a reading above 150 on STEEL's index by Nov. 1, a level last seen in November, 1957. In December, an advance to the 160 range is not out of the question. The prerecession peak was 168, set in the first three weeks of December, 1956.

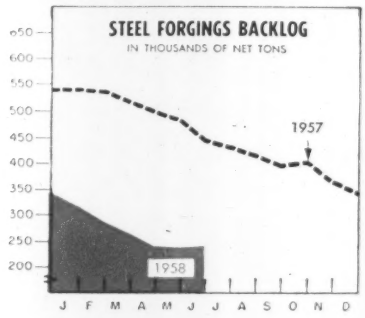
Effects of an Auto Strike

If there is a lengthy auto strike —about six weeks—the effects on the index will be threefold: 1. The upturn will be delayed. 2. The index will slump to near the recession lows. 3. The kickup after settlement will be much faster and greater than that outlined.

If the strike comes in late September, most automakers will be ready to turn out cars at a near record pace after the settlement. The steel industry will have to cut back to perhaps 50 per cent of operations, but there will be little difficulty getting back up to 75 or 80 per cent of capacity in response to automotive orders. Under these conditions, it is possible that an industrial production record could be set before the year is over.

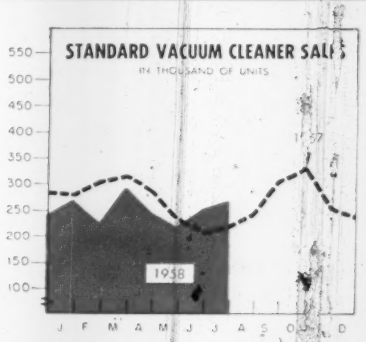
Tool Orders Slump Again

New orders for both cutting and forming type tools dropped in July to the second lowest level of the year at a preliminary $26.9 million, reports the National Machine Tool Builders' Association. Shipments dropped to $29,650,000, the fourth monthly decline in a row. (See table above.) The backlog went up



	Shipments 1958	Shipments 1957	Unfilled Orders 1958	Unfilled Orders 1957
Jan.	108	148	318	537
Feb.	93	135	288	533
Mar.	92	146	266	517
Apr.	83	139	242	497
May	78	135	240	479
June	87	128	242	445
July	...	104	...	431
Aug.	...	115	...	417
Sept.	...	117	...	397
Oct.	...	126	...	401
Nov.	...	105	...	365
Dec.	...	99	...	343

U. S. Bureau of the Census. Data based on reports from commercial and captive forge shops with monthly shipments of 50 tons or more.



	1958	1957	1956
Jan.	265,489	276,738	91,203
Feb.	225,631	300,887	8[illegible],386
Mar.	291,418	312,746	9[illegible],686
Apr.	247,293	281,627	25[illegible],873
May	218,766	231,246	326,008
June	253,127	207,286	248,326
July	263,778	218,276	259,774
Aug.	...	241,218	276,932
Sept.	...	302,869	330,278
Oct.	...	328,655	291,998
Nov.	...	251,123	309,381
Dec.	...	237,501	281,025
Totals	...	3,190,172	3,721,870

Vacuum Cleaner Mfrs' Assn.

from 2.5 months to 2.7 months, indicating that the industry is trying to keep shipments in balance with orders. At that level it also indicates that some shops are working on no backlog at all.

STEEL has pointed out several times that there will be no recovery in the machine tool industry until spending for plant and equipment begins to perk up. The earliest that most observers feel this will happen is mid-1959.

Gas Appliances To Gain

There's no pessimism among makers of gas appliances. The mid-year outlook report of the Gas Appliance Manufacturers Association Inc. indicates that the second half will show marked improvement over the first, leaving the industry with a significant number of plusses for the year. Looking farther ahead, the manufacturers think unit shipments in 1959 will be well above those in 1958 with only two exceptions—conversion burners and gas floor furnaces, which are being replaced by other gas appliance units.

Total range shipments this year will be 9.3 per cent less than during 1957, although the built-in models will gain by 7.9 per cent. Next year, shipments will be 1.9 per cent better than they were in 1958. Automatic water heater shipments will go up 5.8 per cent this year and another 2 per cent next year. Total gas central heating equipment unit shipments will be up 4.2 per cent this year and 7.6 per cent next year. Vented recessed wall heaters will be up 7.9 per cent in 1958 and 3.3 per cent in 1959. Floor furnaces will drop 18.6 per cent this year and continue the trend in 1959.

Gas incinerators will show the biggest percentage gain in 1959, estimated at 41 per cent over 1958 shipments. Gas dryers will be up 12 per cent next year.

Trends Fore and Aft

- Orders for industrial furnaces in July totaled $5,169,000, the highest figure for 1958 and the third time this year the corresponding 1957 monthly figure has been surpassed, reports the Industrial Heating Equipment Association Inc. It's the highest total since March, 1957.
- For the first time this year, both shipments and backlogs of steel forgings increased in June, the Commerce Department reports. (See chart and table above.)

Coming Sept. 8 IN STEEL

Steelmaking in Russia

STEEL's Editor - in - Chief, Irwin H. Such, will prepare a major article on Russian steel and other metalworking progress. As a member of the American Iron & Steel Institute group that visited the USSR last June he is in a unique position to appraise fact and fiction about Russian technology.

He and the group traveled 7000 miles in the USSR, visited plants, mines, and laboratories no outsiders had previously been allowed to see. He toured the integrated steel plant at Magnitogorsk in the Urals. At Severdlovsk, he saw the plant of Uralmash, builder of heavy steel mill equipment. Other facilities seen: Mines and mills at Stalinsk in Siberia. Steel plants at Krivoy Rog and Dnepropetrovsk in the Ukraine, and the Novo-Pulsky experimental steel plant near Moscow. Highlights and significance of what he saw will appear Sept. 8.

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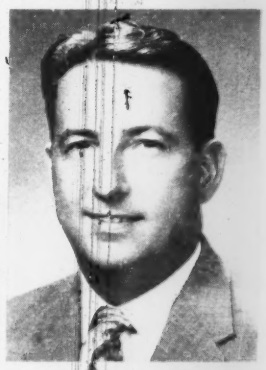
D. C. DUNCAN
Beckman contract sales dir.

JOHN F. MURRAY
Pesco chief product eng.



CHARLES A. BAISCH JR.
Connors Steel products mgr.

JERRY N. POTTS
Vulcan Mold Chicago p.a.

D. C. Duncan, general manager, Helipot Div., **Beckman Instruments Inc.,** Fullerton, Calif., was named to the new corporate position of director of contract sales. **D. C. McNeely** becomes acting manager of Helipot.

John F. Murray was appointed chief product engineer, **Pesco Products Div.** and Wooster, Ohio, Div. of Borg-Warner Corp. He was formerly manager of product engineering at Pesco Products, Cleveland.

Charles R. Carver was named general superintendent of **Valley Mould & Iron Corp.'s** Cleveland plant. Former superintendent at the Hubbard, Ohio, plant, he succeeds the late **Marlin C. Swab.**

Bostrom Mfg. Co., Milwaukee, appointed **Edwin W. Weiland** purchasing agent. He succeeds **J. H. Kitterman,** who was assigned to special projects in product cost analysis. Mr. Weiland was assistant purchasing agent for American Motors Corp. in Milwaukee.

W. D. Staley was elected executive vice president of **Duriron Co.,** Dayton, Ohio. **R. A. Prosser** was made general sales manager.

Thomas Swartwout was appointed distributor sales manager, **Aetna Ball & Roller Bearing Co.,** division of Parkersburg-Aetna Corp., Chicago.

J. E. Carr was appointed manager, industrial division, **Oliver Corp.,** Cleveland. He was manager of the Des Moines, Iowa, sales branch.

Charles A. Baisch Jr. was appointed product manager for a new line of merchant bars and structural shapes at West Virginia Works, **Connors Steel Div.,** H. K. Porter Company Inc. He formerly was Connors' Florida district sales representative.

Paul S. Landis was appointed manager, production planning at the Pittsburgh Works of **Jones & Laughlin Steel Corp.** He was assistant manager, sheet mill products division, in J&L's general office.

Robert B. Brown was promoted to manager of market research for Food Machinery & Chemical Corp.'s **Peerless Pump Div.,** Los Angeles. He was staff assistant of FMC's organization planning and market research group in San Jose, Calif.

E. S. Mathiesen was advanced from an assistant works manager to works manager, **Cutler - Hammer Inc.,** Milwaukee. **G. W. Bolln,** also an assistant works manager, was named to the new post of manager of operations planning. **C. J. Steinke,** former superintendent of the N. 30th Street plant, was appointed to the new post of manager of operations production. He is replaced by **E. H. Comstock.**

Richard M. Mikesell joined **Eprad Inc.,** Toledo, Ohio, as chief engineer. He was with Kaiser Aircraft & Electronics Corp.

Oscar Hedrick was elected president and chairman of **Charmeta Steel Corp.,** Saugus, Calif.

George J. Peer was named sales manager, and **Jerry N. Potts,** purchasing agent and office manager for the Chicago district plant of **Vulcan Mold & Iron Co.** at Lansing, Ill.

Walter P. Lotz was appointed vice president-sales, **Landis Tool Co.,** Waynesboro, Pa. He was general sales manager. **John A. Cover,** former manager-distributor sales, was promoted to sales manager. **John J. Keane** was made assistant sales manager.

William L. Lindgren was made plant manager; **William L. Poust,** assistant plant manager of **Turner Brass Works,** Sycamore, Ill.

Brown & Sharpe Mfg. Co.'s cutting tool division, Providence, R. I., appointed **William P. Sheffield** assistant to the general manager. He is replaced as superintendent of the high speed steel group by **Frank E. Montie. T. Russell Hall** was made assistant superintendent of the group.

James Pittenger was made general superintendent, coke ovens and by-products operations, steel division, **Ford Motor Co.,** Dearborn, Mich. He succeeds **Otto Eberwein,** retired. Mr. Pittenger was superintendent-coke ovens.

Named to manage new departments of **Graver Water Conditioning Co.,** New York, are: **George Apfel,** process engineering; **N. S. Chamberlin,** chemical processing; **J. D. Crell,** foreign operations; **Robert Dvorin,** industrial waste treat-

WILLIAM H. CHAFFEE
American-Standard procurement

THEODORE S. CHAMBON
Kropp Steel manufacturing mgr.

FRANK H. ERDMAN
Kett Tech. Center president

JOHN M. KEENE JR.
Kennecott Sales v. p.

ment; E. A. Strahlendorff, industrial water treatment; R. S. Lewis, sales promotion.

William H. Chaffee was appointed director of procurement, **American Radiator & Standard Sanitary Corp.**, New York. He succeeds the late **Thomas W. McNeill.** Mr. Chaffee had been with Philco Corp. for more than 20 years.

Theodore S. Chambon was made manager of manufacturing, **Kropp Steel Co.**, Rockford, Ill., subsidiary of Kropp Forge Co., Chicago. Mr. Chambon was plant manager of Wendnagel & Co.

Federal Pacific Electric Co.'s Pacific Switchgear Div., San Francisco, formed a new inside sales group, designated the divisional sales section. **Glen A. Dusch** was made divisional manager; **Henry L. Brooke** assistant manager. **Thomas H. Orrock** was made manager-circuit breaker and bushing sales; **John E. Samuelson**, manager-power switching sales; **Walter E. Farrell**, manager-transformer sales; **Robert L. Zipprich**, manager-customer services.

Optical Gaging Products Inc., Rochester, N. Y., appointed **Bernard A. Shedden** its factory representative for the West Coast, with headquarters in San Francisco.

Hayes W. Neil fills the new post of Rocky Mountain regional manager for **National Cylinder Gas Div.**, Chemetron Corp. He is in Denver. **Edwin L. Lawson** fills the new post of Denver district manager for the division. **Herbert H. Pollock Jr.** was named to the new post of Pueblo, Colo., district manager.

Frank H. Erdman was named president of **Kett Technical Center Inc.**, research and development center of U. S. Industries Inc. at Pompano Beach, Fla. He succeeds **Karl Schakel**, resigned. Mr. Erdman was associated with Wright Aeronautical Corp., the engine division of Curtiss-Wright Corp., and McDonnell Aircraft Corp.

Joseph T. Kohn Jr. was made factory superintendent, **Safety Clothing & Equipment Co.**, Cleveland.

John F. Carey was made head of military sales for the electrical products group, **Electric Auto-Lite Co.** He is in New York. Mr. Carey was eastern district manager, missile products division, **Fruehauf** Trailer Co.

Rene V. Elicarno was made an operations research engineer, production control department, at **Allis-Chalmers Mfg. Co.'s** West Allis, Wis., Works.

Andrew A. Schittina was appointed assistant sales manager, **Wallace Barnes Steel Div.**, Associated Spring Corp., Bristol, Conn. He replaces the late **A. S. Wells.**

Harold P. Field was appointed director of marketing, electronics division, **Stromberg - Carlson Div.**, Rochester, N. Y., General Dynamics Corp.

Z. W. Pique was named director of sales for Hughes Products Group, **Hughes Aircraft Co.**, Los Angeles. He will also administer marketing, advertising, and government sales and contracts. He was with Texas Instruments Inc.

John M. Keene Jr. was appointed a vice president and assistant sales manager of **Kennecott Sales Corp.**, subsidiary of Kennecott Copper Co., New York. He was vice president-sales, Gulf Sulphur Corp.

James C. Darby was appointed general sales manager for **Truarc Retaining Rings Div.**, Waldes Kohinoor Inc., Long Island City, N. Y. He was eastern sales manager, aircraft division, Townsend Co. Inc.

Harold D. Kenney was appointed comptroller of **Babcock & Wilcox Co.'s** boiler division in Barberton, Ohio.

E. C. DeVault was appointed Toledo, Ohio, district sales engineer for the press division of **E. W. Bliss Co.**, Canton, Ohio. He is at the Toledo plant.

F. M. Trobridge was appointed assistant chief engineer of **Koehler Aircraft Products Co.**, Dayton, Ohio.

Troy G. Cox was made Dallas branch manager, **Harris Calorific Co.**, Cleveland.

Amchem Products Inc., Ambler, Pa., appointed **Jack M. Price** assistant sales manager, metalworking chemicals division.

Taylor Instrument Cos., Rochester, N. Y., appointed **Dr. Paul Pagerey** to the new post of associate research director.

Karl K. Kocher was made acting works manager of the Buffalo plant of Nuclear Products-Erco Div., **ACF Industries Inc.** Former works manager, **Francis H. Lewis**, transferred

Yes, you can save cable dollars when you go to higher voltages!

For 15 kv and up—consider Anaconda Durasheath rubber-insulated, neoprene-jacketed power cable! Its lighter weight, flexibility of installation, ease of splicing may mean lower installed costs!

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Now, Anaconda's proven "know-how" in cable construction has made it possible to bring all these advantages to *high-voltage* Durasheath cable! If you're "going up" to higher voltages, see the Man from Anaconda about Durasheath. He will be glad to help you work out your particular problem. Or write: Anaconda Wire & Cable Company, 25 Broadway, New York 4, New York. *Trademark

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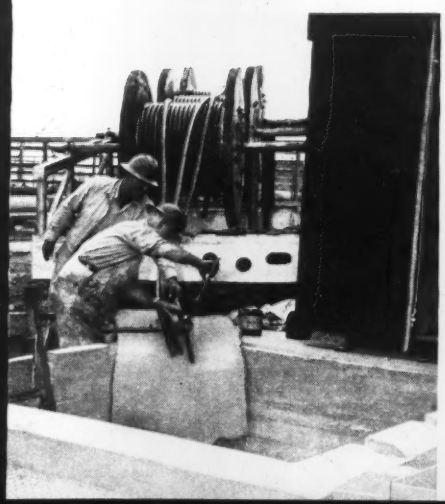

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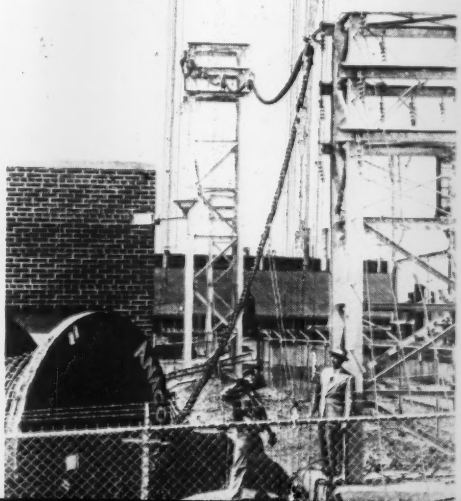


UNDERGROUND

JOHN N. POMEROY JR.
General Smelting president

FRED A. LOEBEL
Cleaver-Brooks officer

RAY P. DUNN
Lindberg Melting Furnace post

GLENN F. WHITELEY
Heppenstall plant manager

GEORGE F. GILLIGAN
Bucyrus-Erie works mgr.

GEORGE KEPLEY
Jeffrey Mfg. dept. mgr.

to the Riverdale, Md., plant as consultant to the division president.

Glenn F. Whiteley was appointed manager of the Indianapolis plant of **Heppenstall Co.** He was chief metallurgist.

George F. Gilligan was appointed works manager of **Bucyrus-Erie Co.'s** plants in Erie, Pa. He was formerly with Joy Mfg. Co. **Alexander L. Bupp,** assistant treasurer of Bucyrus-Erie, was appointed manager of planning.

Joseph J. Lauer Jr. was appointed quality control manager for **Comax Corp.,** Buffalo. He held the same post at Electric Auto Lite Co.'s plant in Niagara Falls, N. Y.

Mexico Refractories Co. announces that **Robert J. McCarthy** has returned to his post as president of **Missouri Refractories Co.,** Los Angeles, a subsidiary. He was on leave of absence to organize the new Atlantic division warehouse operation of Mexico Refractories in Elizabeth, N. J.

George Kepley was made manager, materials preparation department, **Jeffrey Mfg. Co.,** Columbus, Ohio. He replaces **Byron M. Bird,** who will retire Dec. 31. Mr. Kepley was replaced as manager of the Bluefield, W. Va., district office by **Edwin C. Stephenson. Paul Poling** replaces Mr. Stephenson as a sales engineer, Pittsburgh office.

Armco Steel Corp., Middletown, Ohio, appointed **R. W. Davison** assistant to executive vice president. He was director of sales planning and co-ordination. **John N. Lind** succeeds **E. H. Dorenbusch,** retired, as director of transportation. **R. W. Kelly** was made general traffic manager, Armco Div. **William Rehse** was made traffic manager-service; **D. F. Earhart,** traffic manager-rates, Armco Div.

Frederick W. Hughes was named production manager of the Chicago fabricating plant of **Fisher Body Div.,** Willow Springs, Ill., General Motors Corp. He was production manager of Fisher Body's No. 1 plant in Grand Rapids, Mich.

John N. Pomeroy Jr. was elected president of **General Smelting Co.,** Philadelphia. He succeeds **J. Nevin Pomeroy,** now chairman and senior consultant.

Cleaver-Brooks Co., Milwaukee, established its special products division as a separate corporation. Officers of the new Cleaver-Brooks Special Products Inc. are: **Fred A. Loebel,** president and general manager; **Gordon F. Leitner,** vice president; **E. A. Kovic,** secretary-treasurer. In the boiler division of Cleaver-Brooks, **R. W. Pipkorn** was promoted to chief engineer; **P. E. Buday** to assistant chief engineer.

Ray P. Dunn was made technical director, **Lindberg Melting Furnace Div.,** Lindberg Engineering Co., Chicago. He was director of metallurgy for U. S. Reduction Co.

Electro-Motive Div. of General Motors Corp. at La Grange, Ill., named **David M. Lyon** director of research. He succeeds **E. W. Kettering,** who was made research assistant to the general manager.

OBITUARIES...

William D. Vanderbilt Jr., 46, assistant general manager, **Cleveland Crane & Engineering Co.,** Cleveland, died Aug. 21.

Edmund J. von Henke, 79, founder and president, **American Electric Fusion Corp.,** Chicago, died Aug. 20.

John H. Chaplin, chairman, **Veeder-Root Inc.,** Hartford, Conn., died Aug. 15.

Raymond E. Ford, 61, in charge of wire rope sales, Chicago office, **Bethlehem Steel Co.,** died Aug. 19.

Anthony P. Krieg, retired purchasing agent, **Wollensak Optical Co.,** Rochester, N. Y., died Aug. 10.

T. C. Fedders, 64, former president, **Fedders Mfg. Co.,** Buffalo, died Aug. 18.

Albert J. Wettlaufer, 58, vice president-sales, **Wettlaufer Engineering Corp.,** Detroit, died recently.

Charles A. Medsker, treasurer and factory manager, **Gasflux Co.,** Elyria, Ohio, died Aug. 8.

Master mechanics like the Wean "Flying Press" as much as presidents do

The Wean "Flying Press" does one thing extremely well: it produces stamped parts at absurdly low costs per piece. This pleases management because the cost reduction it makes possible helps widen the profit spread in finished products.

To find the reason for the master mechanic's satisfaction, we must examine the operating characteristics of the "Flying Press," a difficult job to do in print. First, the "Flying Press" is completely unique among stamping presses, producing parts from coil without stop-and-go indexing at the press. But, far from making the equipment *more* difficult to operate, this "Flying Press" principle eliminates the use of clutch, brake and fly-wheel; all points of potential press break-down! And there's less danger of die breakage with the "Flying Press," both during set-up and operation, since automatic devices to protect the tooling are built-in.

We could go on with a list of many other advantages which the Wean "Flying Press" offers over ordinary designs, but there's just too much to cover. However, we have summarized the general points of superiority in a booklet which we'll gladly send you. If you'd prefer, one of our sales engineers will be glad to discuss the "Flying Press" in regard to your specific production at your convenience.

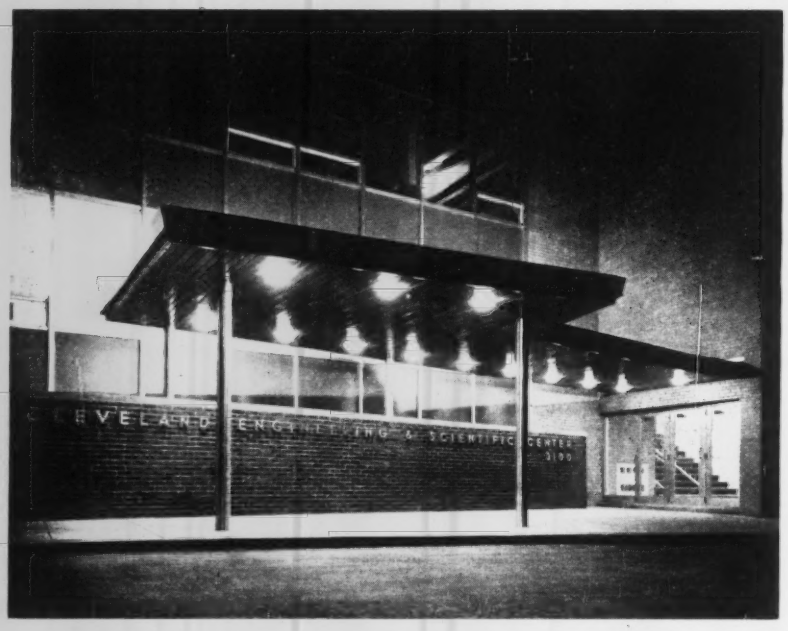
May we hear from you, to send the booklet or call?

WEAN

WEAN EQUIPMENT CORPORATION

CLEVELAND 17, OHIO

Detroit • Chicago • Newark



Cleveland's new technical meeting center offers . . .

Helping Hand for Engineers

THE FIRST of 17 new centers designed to bring together the activities of engineering and scientific groups has just been opened in Cleveland. Sixteen other cities are building similar structures.

Aim of the $1.5 million Cleveland Engineering & Scientific Center is to attract and keep the thousands of technically trained people necessary to the future of northeastern Ohio, explains the Cleveland Engineering Society, which owns and operates the facility.

Plan of Action — The society hopes to do the job by providing a place where the more than 50 technical societies in the area can hold meetings, conferences, classes, dinners, and exhibits. The center also has an educational program. Technical men may take courses beyond those offered by area colleges and universities.

A library of over 100 of the leading trade and engineering publications will be maintained. Projects being considered include the setting up of a communications channel between the societies and technical publications.

Engineering Need Growing—The need for such a center is pointed up by one engineering school which predicts that by 1980 we will need one engineer for every 90 persons, vs. 1 per 1800 at the turn of the century and 1 per 300 in 1950.

Significance—When the cornerstone of the center was laid in August, 1957, Charles F. Kettering, the auto industry's leading engineer-scientist, observed that it "could be one of the greatest servant organizations in the world."

Community support made the center possible: Some 500 northeastern Ohio companies and 3600 individuals supplied the funds.

Stokes Opens Metals Lab

F. J. Stokes Corp., Philadelphia, has opened its vacuum metallurgy laboratory for use by outside firms. Limited scale research projects in vacuum metallurgy can be accommodated. Facilities include a Stokes Model 437-520, induction heated, vacuum melting furnace. Capacity: 17 lb. Maximum ingot size: 10 x 15 in.

Accurate Buys Foundry

The Accurate Industrial District, Chicago, has purchased McCarthy Foundry Co., also of Chicago, reports Ralph Cohn, Accurate's president.

Mr. Cohn says that the 12 acres adjoining the foundry will be used for expansion.

California Division Formed

Illinois Tool Works, Chicago, has formed a new division in Hawthorne, Calif., headed by Herbert C. Hansen. Called the Calinoy Div., it will be the company's national headquarters for sales, engineering, and manufacturing of metal fasteners for aircraft and missiles.

Platinum Facilities Merged

The platinum production facilities of American Platinum & Silver Div., Engelhard Industries Inc., have been absorbed by Engelhard's Baker Platinum Div. All platinum products will now be produced at the new Baker plant in Newark, N. J.

Gulton Division Renamed

Gulton Industries Inc., Metuchen, N. J., has changed the name of its Glennite Instrumentation Div. to Gulton Instrumentation Div. Glennite, the company's registered trademark, is used for products made by other divisions as well as by the renamed division.

Canadian Pipe Plant Begun

Steel Co. of Canada Ltd., Montreal, Que., has started to clear a site for a $10-million steel pipe plant at Contracoeur, Que. Excavation will begin in September, with plant completion scheduled for mid-1959.

Small diameter steel pipe for heating, plumbing, electrical, and other industrial purposes will be produced.

Dominion Steel & Coal Corp. Ltd., Montreal, has announced it

will build a steel rolling mill in the same area.

Extrusion Press Installed

International Aluminum Corp. has purchased a 1250/1500-ton extrusion press and a 15-ton hydraulic stretcher from Sutton Engineering Co. The equipment has been installed at International's Miami, Fla., plant.

Pittsburgh Company Sold

Petroleum Pipe & Supply Co., Pittsburgh, has been bought by Charles T. Hapgood, who will assume the presidency. The firm distributes pipe, valves, fittings, and heating supplies. Mr. Hapgood is a former Republic Steel and Jones & Laughlin executive.

Plating Division Opens

Marlette Plating Co. Inc., Buffalo, has set up a Hard Chrome Plating Div. It will do precision plating for aircraft and missiles. John E. Marlette is sales manager.

Houghton Buys Plant Site

E. F. Houghton & Co., Philadelphia, has bought a five-acre plant site near Atlanta. Houghton will enlarge and modernize the buildings and install equipment for blending, compounding, and treating industrial oils and chemicals.

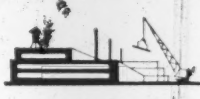
Form Plating Supply Firm

Keystone Plating Supply Inc., Hazel Park, Mich., has been formed by Jack E. Keyes and Henry V. Pfeuffer, formerly of Wagner Bros. Inc., Detroit. Keystone will furnish metal finishing supplies to Michigan industry.

Askania Changes Name

Askania Regulator Co., a subsidiary of General Precision Equipment Corp., New York, has changed its name to GPE Controls Inc.

Edwin A. Link, president of General Precision, says GPE will offer the pneumatic, hydraulic, and electrohydraulic process control systems formerly offered by Askania.



NEW PLANTS

Air Reduction Sales Co., a division of Air Reduction Co. Inc., New York, is constructing an oxygen and nitrogen producing plant in the Armourdale district of Kansas City, Kans. Its oxygen producing capacity will be 5 million cu ft per month.

Mexico Refractories Co., Mexico, Mo., will build a $2-million refractories plant near Stuckton, Calif. A $1-million modernization of its home plant will be completed by the end of this year.

CONSOLIDATIONS

Thompson Products Inc., Cleveland, purchased **Federal Industries Inc.**, Detroit, maker of transmission and power steering pumps for the transportation industry. Thompson will operate the new property as the Federal Works of the Michigan Group. Drew C. Haneline will continue to manage the operation.

Macomber Inc., Canton, Ohio, acquired **Rock Island Bridge & Iron Works**, Rock Island, Ill., and will operate it as a wholly owned subsidiary under the name of Rock Island Steel Co. Charles R. Roberts will continue as president of the Rock Island firm. Macomber is a fabricator of open web, structural steel products.

Thrall Car Mfg. Co., Chicago Heights, Ill., railroad freight car manufacturer, purchased **Western Railway Equipment Co.** and **Railway Devices Co.**, St. Louis. Main offices of the two supply firms will be consolidated and relocated in the Railway Exchange Bldg., St. Louis.

Diebold Inc., Canton, Ohio, manufacturer of bank vault equipment and office equipment purchased **Herring-Hall-Marvin Ltd.**, Toronto, Ont., maker of bank protection products. Officers of the new Diebold affiliate are: President, Raymond Koontz; vice presidents, A. W. Jackson and A. H. Lambden; vice president and treasurer, F. D. Robinson; general manager, Leonard Foden; secretary and assistant treasurer, D. A. Crawford; assistant secretary, H. J. Stuart; and purchasing agent, J. G. Grierson. A manufacturing plant will be constructed in the Toronto area.

ASSOCIATIONS

Porcelain Enamel Institute, Washington, appointed William E. Pierce to the newly created position of manager of product engineering. His basic function will be to develop new uses for porcelain enamel on steel and increase present applications. He will also seek the co-operation of companies with porcelain enameling facilities, steel manufacturers, frit companies, and others.

Society of Mining Engineers of AIME, New York, announces the succession of Jerome W. Woomer, Pittsburgh consultant, to the post of president for one year beginning February, 1959. Stanley D. Michaelson is the incumbent. Arthur B. Cummins, Manville, N. J., has been named president-elect to succeed Mr. Woomer.

NEW ADDRESSES

Western Industries Inc. acquired larger facilities at 2726 W. 36th Place, Chicago, Ill. Western Industries and its Western Railroad Supply Co. division manufacture railway maintenance-of-way products, industrial lifting jacks, railway signaling accessories and communication devices, and automatic parking gates for off-street car parking.

Island Equipment Corp. moved its general office and factory to 1090 E. 31st St., Hialeah, Fla. The post office address is P. O. Box 380276, Miami 38, Fla. The firm maintains a regional sales office at 135-20 39th Ave., Flushing 54, N. Y.

Industrial Filtration Div., U. S. Hoffman Machinery Corp., moved to Thompson Road Plant No. 1, Syracuse, N. Y.

JET WINGS strengthened like swords

How the new Douglas DC-8 draws strength from the world's tallest bottom-entry furnace

As fire fuses vital toughness into a sword, a bath of heat in this giant Despatch furnace gives the knife-like wings of the new DC-8 strength to withstand near-sonic speeds.

Douglas engineers were intent on building great strength and flex into the DC-8's wings and fuselage—to resist the buffeting of the most powerful air torrents. So Douglas called on Despatch for a huge, but delicate heat-treating system. Despatch responded by designing and building Douglas the world's tallest, vertical, bottom-entry furnace, with elevator system. Let's watch it at work:

Parts to be solution treated roll into a completely-enclosed loading area on a 24-foot long truck. Far above, two great doors slide open and the mammoth elevator eases the heavy load up into the heat chamber. The doors seal shut. An intricate reactor system sprints the temperature of the aluminum and steel load to 930° in just 15 minutes. (The furnace can hold temperatures up to 1200° indefinitely with only plus or minus 4° variations.)

The doors swing open and the heat-treated parts descend 28 feet in five seconds. With a roar the vital parts are immersed in the quenching tank for a scientifically-controlled soaking. Seconds later the elevator "surfaces" and returns the toughened wing and fuselage sections to the loading floor.

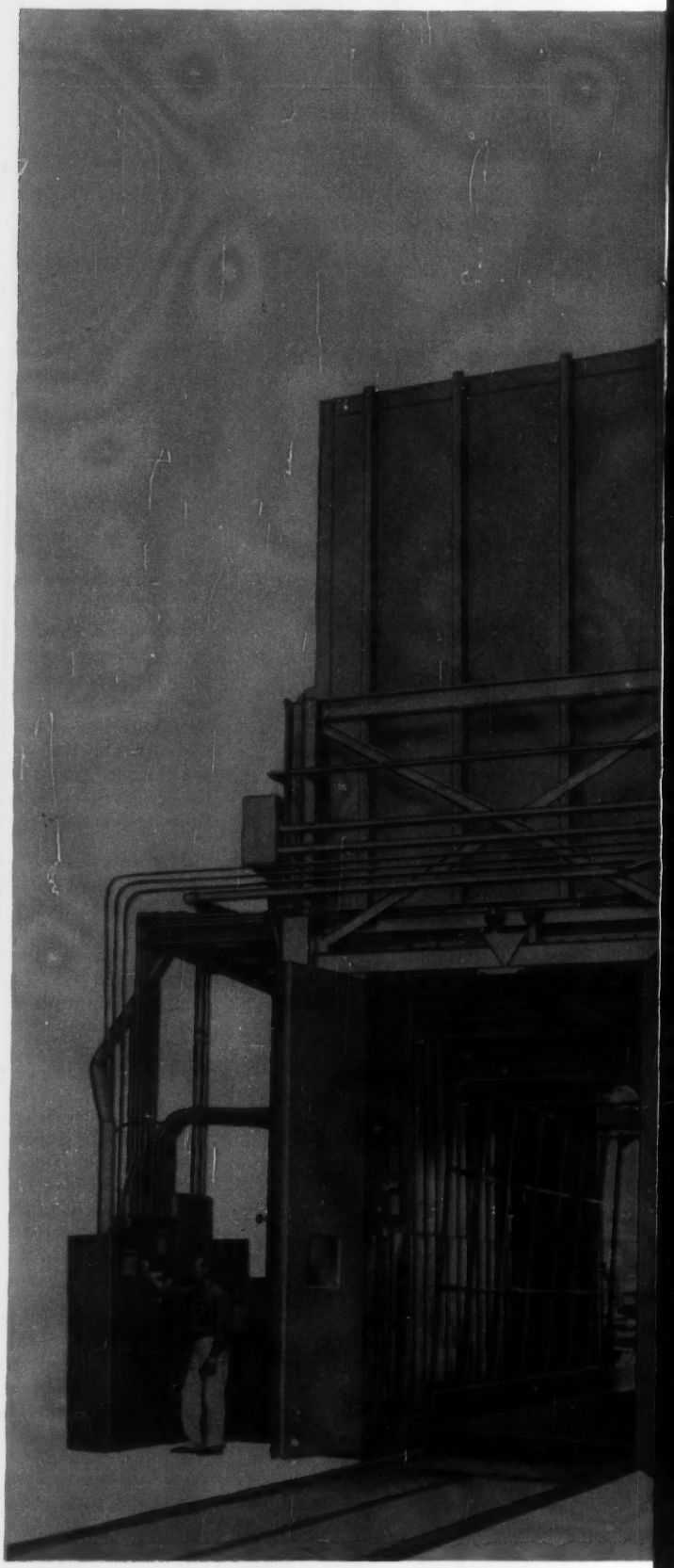
What sounds like a task for a 10-man crew is handled by one man who runs the giant Despatch furnace. One man pushes the buttons that radiate new strength and flexibility into the nation's most modern airliner.

For full facts on the capabilities of all Despatch heat treating and finishing products and systems, write or call . . .

DESPATCH OVEN COMPANY

619 S.E. 8th St., Minneapolis, Minn.

Department 11 A



DESPATCH
DESPATCH
DESPATCH

automotive

missile

Bottom Entry Furnaces also custom built by Despatch for other industries

ordnance

DESPATCH
OVEN
CO.

why make parts the slow, costly way?

COLD-HEAD THEM!

Steel

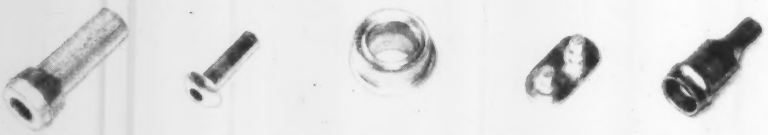
Tappet plunger, splined square-head shaft, collar for adjustment wedge, universal joint bearing cup, pipe plug, spark plug body.

Copper

Ornamental stud, distributor cap center insert, commutator bar, wire clamp, solenoid contact, starter field terminal.

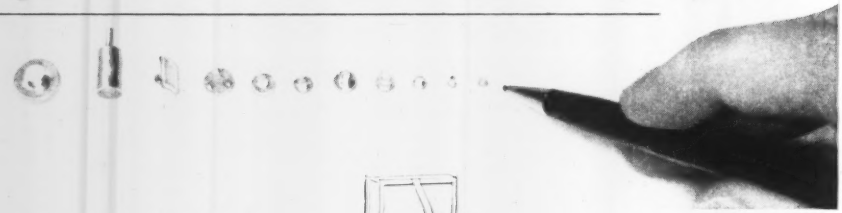
Aluminum

Hollow rivet, blind rivet, flanged collar, link, distributor cap outside insert.



Precious Metals

Electrical contact, transistor case, miscellaneous rivets and electrical contacts.



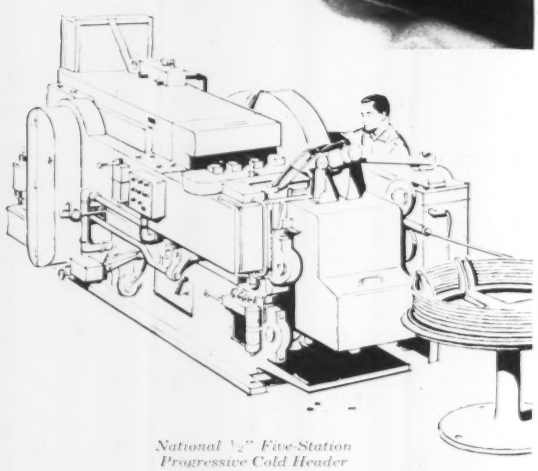
Of various metals, the parts identified above were developed for fast, accurate production on National Cold Headers.

Most of these important jobs are made without waste, ready for end use. All are cold-forged from coiled wire — start-to-finish in one compact Header — without any intermediate steps.

New technical break-throughs are making jobs like the above every day commercial realities. More workable wire, better lubricants, improved die materials and vast engineering experience are combining to adapt formerly difficult work to modern, profitable methods.

Whether you now have Headers or not, send us prints or samples of your jobs, or bring them to Tiffin where more of our people can help with *your* problem.

Perhaps up-to-date Cold Heading, a truly fast-growing process in metalworking, can pay off for you.



National 1/2" Five-Station Progressive Cold Header

Founded 1874 — DESIGNERS and BUILDERS of MODERN FORGING MACHINES • MAXIPRESSES • REDUCEROLLS • COLD HEADERS BOLTMAKERS • NUT FORMERS • TAPPERS • NAILMAKERS CO-PIONEERS WITH INDUSTRY OF ADVANCED METALWORKING PRODUCTION METHODS

NATIONAL MACHINERY CO.

TIFFIN, OHIO, U. S. A.

HARTFORD DETROIT CHICAGO

Technical Outlook

NEW INFORMATION CENTER—If you are interested in titanium, beryllium, refractory metals, high strength alloys, corrosion and oxidation resistant coatings, and thermal protection systems, contact the Pentagon's Defense Metals Information Center, Battelle Memorial Institute, Columbus, Ohio. Replacing the Titanium Metallurgical Laboratory, it will do surveys and research on materials.

OXYGEN-SAFE OIL—Some oxygen compresing plants are switching from water lubrication to an explosion-proof synthetic oil. The new lubricant, produced by Halocarbon Products Corp., Hackensack, N. J., is called Halocarbon Oil. It's based on chlorotrifluoroethylene polymers.

MOLYBDENUM SKIN—Molybdenum is being clad experimentally with stainless steel and Inconel to create oxidation resistant surfaces for large parts such as aircraft structural members. Copper and nickel clad molybdenum has been used for several years in electronic circuit components.

THIN CAST IRON—Thin walled, nodular iron castings can be produced if you use a magnesium silicon alloy containing copper as an inoculant, reports the U. S. Army Ordnance Corps, Washington. Carbon content must be above the eutectic point to attain best conditions for hypereutectic nodule formation.

NEW WAY TO MAKE CERMETS—Electrophoretic deposition is the name of Vitro Corp. of America's (New York) process. Electrodes are immersed in a colloidal dispersion of charged particles, and an electrostatic field causes the suspended particles to move to one of the electrodes. Metallic oxides and ceramic materials are deposited, then fired in a reducing atmosphere. The ceramics are entrapped in the pores of the sintered matrix, forming a cermet that has the strength of the metal and the oxidation resistance of the ceramic at temperatures over 700° F.

ALUMINUM ABOVE THE CLOUDS—Paving the way to better understanding of the high altitude jet stream, engineers at the U. S. Army Signal Engineering Laboratory, Ft. Monmouth, N. J., are using aluminum chaff as a weather indicator. A small rocket carries the fine particles as high as 54 miles and ground radar traces their earthward course. Scientists are studying the effect of wind direction and velocity.

COATING MAKES BIG DIFFERENCE—Anodized magnesium will compete with aluminum if it is coated with a clear lacquer to add corrosion resistance, claims Dow Chemical Co., Midland, Mich. Even with the coating, costs and time are saved. Reason: The anodizing time for magnesium is said to be only 3⅓ per cent that of aluminum.

PLASTIC FOR HOT USES—Competition for high temperature alloys is offered by a phenolic resin called Phyophen 5900. (Its developer: Reichhold Chemicals Inc., White Plains, N. Y.) The material can be laminated with glass or asbestos to withstand 4500° F briefly or 500° F for more than 100 hours.

ULTRACOLD METAL STUDY—Chemists will be able to study metals at temperatures approaching absolute zero (−459.6° F) with the continuously operating electromagnet at the University of California. It will be used to give exact information about nonavailable energy.

MORE ACCURATE HOLES—The new Ford engine plant at Lima, Ohio, has a new method of finishing valve guide holes called gun reaming. It's an adaptation of gun drilling and is said to produce hole sizes accurate to within 0.0001 in.

New Methods Meet the Challenge of Honeycombs

Management at this aircraft company authorized the expenditure of 26,000 man-hours and considerable capital in its effort to get efficient production. The case is typical of the approach that is saving dollars for companies with aggressive management. The story is based on one of the top entries in the Cost Crisis Awards Competition. Another will appear next week

COST-CUTTING TECHNIQUES

They enabled Boeing to cut costs and boost quality of honeycomb panels for aircraft. The score: Up to 25 per cent saved on fabricating costs; 75 per cent reduction in rejects.

PRODUCTION men were faced with a whole set of problems when they set about to machine and fabricate contoured panels from honeycomb, the darling of today's aircraft designers.

Biggest problem: Finding a way to maintain the close tolerances required at a realistic production cost.

Tough Cutting—At Boeing Airplane Co., Seattle, the source of trouble was traced to the machining of the flimsy and eccentric core. Great care had to be taken to prevent tearing, chipping, or cracking of the edges. Burrs were commonplace. William H. Hagen, assistant to the factory manager, says ordinary bandsaws and cutters failed, even when run by experts.

Tolerances were hard to hold. The completed assembly could sustain no greater over-all mismatch than ±0.005 in. That required holding detail parts to ±0.001 or ±0.002 in.

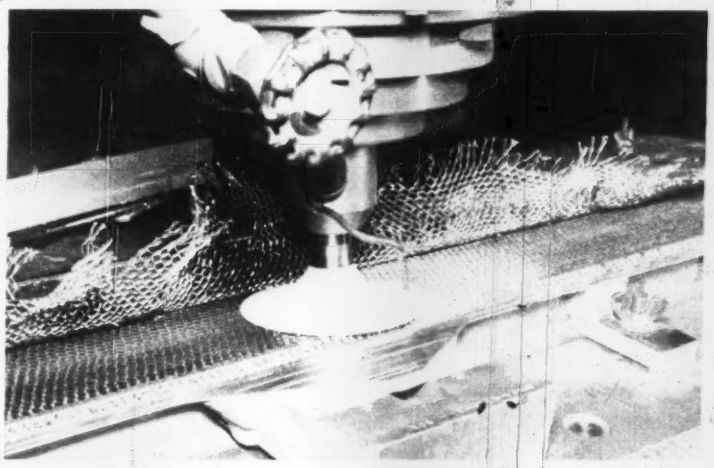
To keep it from crushing or crumbling, the core had to be supported. One system was to fill the core with water and freeze it. Then the core, ice filler and all, was contoured. Freezing took time. It also was necessary to allow for a 10 per cent expansion.

Boeing production men also tried starching the cores before they were machined. The starch gummed the machines and tools and was difficult to wash out of the core after machining.

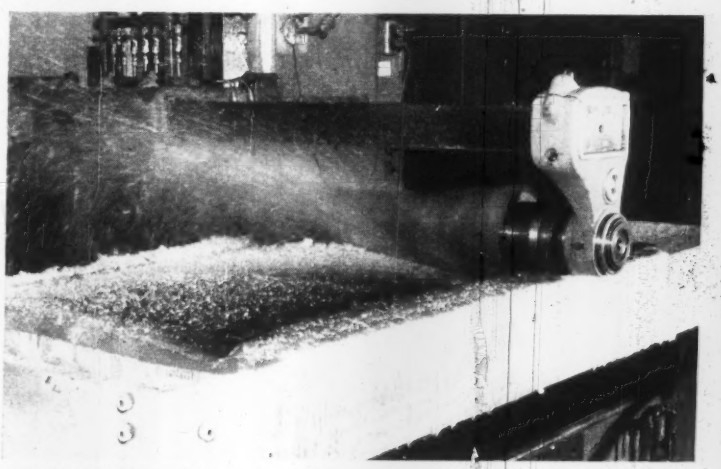
Series of Solutions—The complex problem of high-cost manufacturing and seeming production inefficiency was turned over to Boeing's Manufacturing Research Section, which in turn called for support work from the Tool Design Unit.

Their first innovation was a "valve-stem" cutter that made it possible to machine unstabilized honeycomb in a variety of forms without ice or starch. The high-speed steel cutter evolved from the valve stem of an ordinary automobile engine. The friction disc end was sharpened to a keen edge; the shaft was thrust into a boring mill. In working with the cutters, the tool design group set them in gantries above tables that were fitted with rise-and-fall cams to attain required contours. The swift efficiency of these cutters led the tool unit to the invention of a toothless bandsaw with a knife edge for beveling and slicing. Next, for a special trepanning operation, the unit came up with a boring bar without teeth. This was nothing more than a steel tube, sharpened at the end to a knife edge.

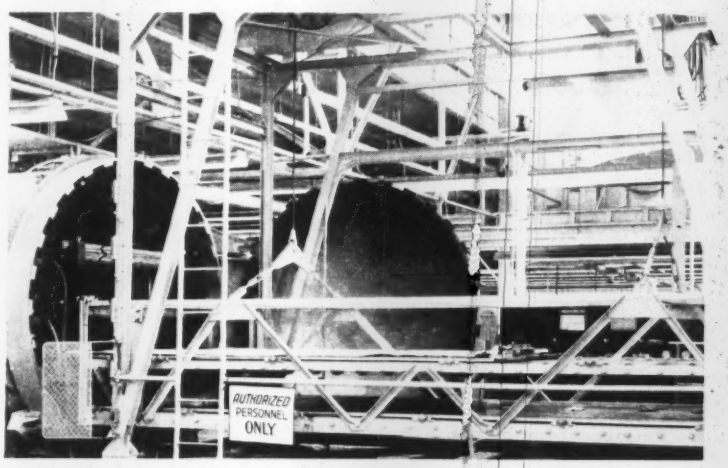
Finally, the slab mill (especially



DISC CUTTER SLICES through unstabilized honeycomb (the core walls are unsupported) that's bonded to a skin panel and held in a vacuum chuck. The high-speed steel cutters were made from automobile valves



CONTOUR MACHINING of frigid honeycomb (the walls are supported with ice) is done with a newly developed, carbide helical milling cutter. The special cutter permits machining of honeycomb in one long pass



BONDING ASSEMBLIES is done in this new autoclave. The unit has three shelves for holding work—has trimmed curing time. It requires only 19 minutes to unload the autoclave and reload it with new assemblies

for contouring) came under scrutiny. Its helical cutter was revamped with special carbide blade attachments. With the new cutter, it is possible to machine frozen honeycomb spanwise to contour in one long pass rather than in strips and many passes.

Equipment — All stages of the manufacturing operation were studied. The refrigeration unit was enlarged to prevent delays in freezing. Six hours were saved on some cycles. A jig was devised to turn a frozen part over quickly so the opposite side could be machined without refreezing. A new autoclave (to cure adhesive) was developed to take three shelves of metal bond assemblies at a time.

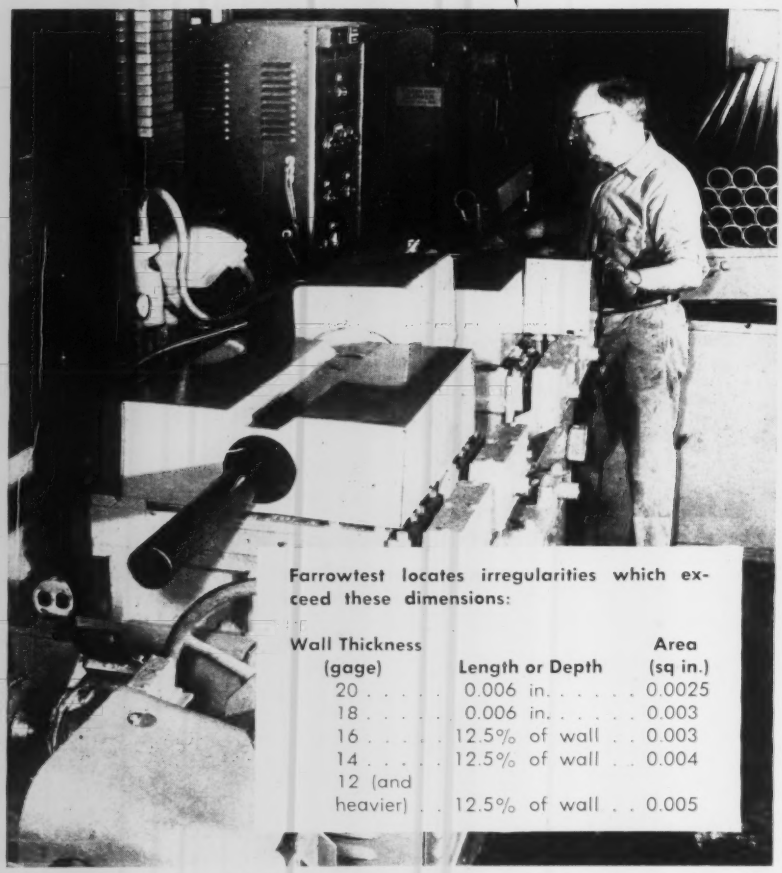
Finale — All of those solutions boosted efficiency and cut costs, but they didn't touch the close tolerance problem. It was whipped only when the manufacturing research section came up with the idea of in-process machining. Instead of machining components separately (to extremely fine tolerances to prevent cumulation of errors), the assembly is machined in stages as it is being built and bonded.

Thus, in the case of the KC-135 jet tanker ruddevator (the guiding vane for the Stratotanker refueling boom), the first stage bond includes a core block and spar tube, three other pieces of honeycomb core, and a nose extrusion. These are cooked together in the autoclave.

In the second stage, the unit is frozen and placed on the slab mill under the helical carbide cutter for machining to contour and tolerance on one side. The work is defrosted, turned, frozen, and machined on the reverse side. Edges of the extrusion are machined as well as the core.

In the third stage, skin and doublers are bonded to the unit. The assembly is then trimmed. The final tolerance is easily held to the ± 0.005 in.

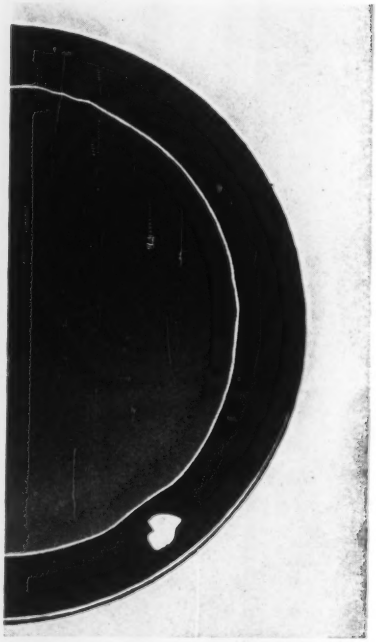
In the first stage of the KC-135 flap for the trailing edge of the wing, the 0.016-in. thick skin is bonded to a core and an extrusion. This unit is rough sawed, then put in a vacuum chuck and machined unstabilized with a valve-stem cutter. In the next stage, the top skin is bonded. This part also is within final tolerances.



Farrowtest locates irregularities which exceed these dimensions:

Wall Thickness (gage)	Length or Depth	Area (sq in.)
20	0.006 in.	0.0025
18	0.006 in.	0.003
16	12.5% of wall	0.003
14	12.5% of wall	0.004
12 (and heavier)	12.5% of wall	0.005

The Farrowtester, an eddy current device, checks pipe and tubing to locate internal defects. It is sensitive to imperfections that are larger than the minimum listed in the table



A typical pipe defect (top) gives the pattern shown. Width is not important

Unit Finds Hidden Pipe Defects

This nondestructive tester is calibrated to locate them. It adjusts the reject point to suit customer specifications. Eddy current operation finds flaws as small as 0.0005 in. wide

PIPE DEFECTS (such as internal cracks and voids) which could not be detected by hydrostatic tests are no longer a problem at Republic Steel Corp., Cleveland. An eddy current tester finds them.

Engineers at the Steel & Tubes Div. defined the size of acceptable defects and use this limit for calibrating the eddy current unit. It will reject all pipe that contains imperfections larger than the maximum specified.

Welded steel boiler tubing supplied to the Navy is an example of the machine's reliability. Over 10 million ft was shipped; not one report of failure or defect was received by Republic.

History—Ten years of research and 18 years of production experience have contributed many developments resulting in refined screening circuits. Today, the machine finds defects without picking up signals from nonharmful variables.

The original machine was devel-

oped in 1939 by a Republic engineer, Cecil Farrow. Since inception, Farrowtesters have checked over 300 million ft of welded tubing for aircraft, pressure, and other critical applications. The machines are used exclusively by Republic.

Customer Sets Limits—Since he can define the exact size of acceptable defects, the customer can specify his requirements and be certain of obtaining tubing that has been 100 per cent tested.

The unit is incorporated into the production line. It locates and rejects any irregularity which penetrates the tube wall or exceeds the limit. The chart shows the dimensions of the smallest defects that the unit will find.

An advantage of the Farrowtest: When an imperfection is present the circuits will react whether the width is 0.0005 or 0.05 in. A discontinuity in the flow of eddy currents (larger than the calibration setting) produces a signal that actuates the tube rejection mechanism.

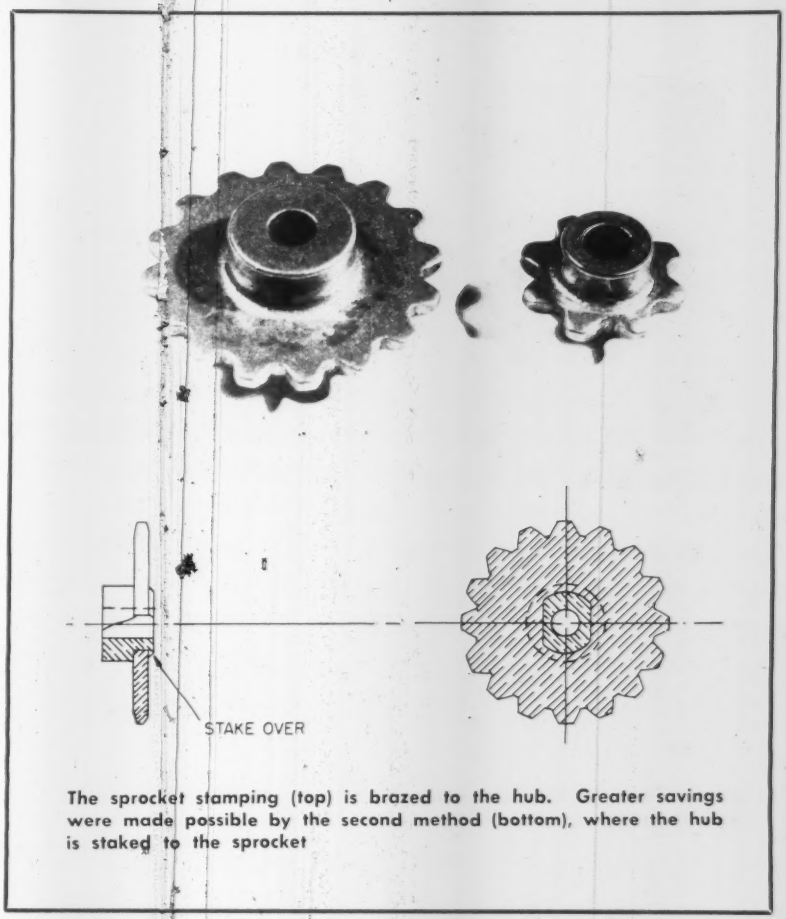
Tubes tested at different times and on different Farrowtesters give identical signals. Rejection is independent of the observation and judgment of the operator.

Hydrostatic Shortcomings — Republic engineers found that the following defects could exist in a tube and still pass a pressure test. (These are large enough to be objectionable in many applications.)

1. Defects 90 per cent through the tube wall and as long as 1.5 in.
2. Defects 50 per cent through the wall and up to 7.7 in. long.

Large defects may not be detected by the standard hydrotest, even with test pressures as high as 8000 psi. Typical examples: 2.7 in. long, 46 per cent through the wall; 1.4 in. long, 94 per cent through the wall; and 1.3 in. long, 43 per cent through the wall. (All pipes used in the examples have 1.75-in. outside diameters and 18 gage walls.)

Tubes may fail in low pressure service after they pass the 8000-psi test. Republic points out that a high pressure test sometimes increases the chance of a failure instead of guaranteeing against it. The company prefers the nondestructive tester as a practical combination of economy, flexibility, and accuracy.



The sprocket stamping (top) is brazed to the hub. Greater savings were made possible by the second method (bottom), where the hub is staked to the sprocket

Stamping Cuts Costs

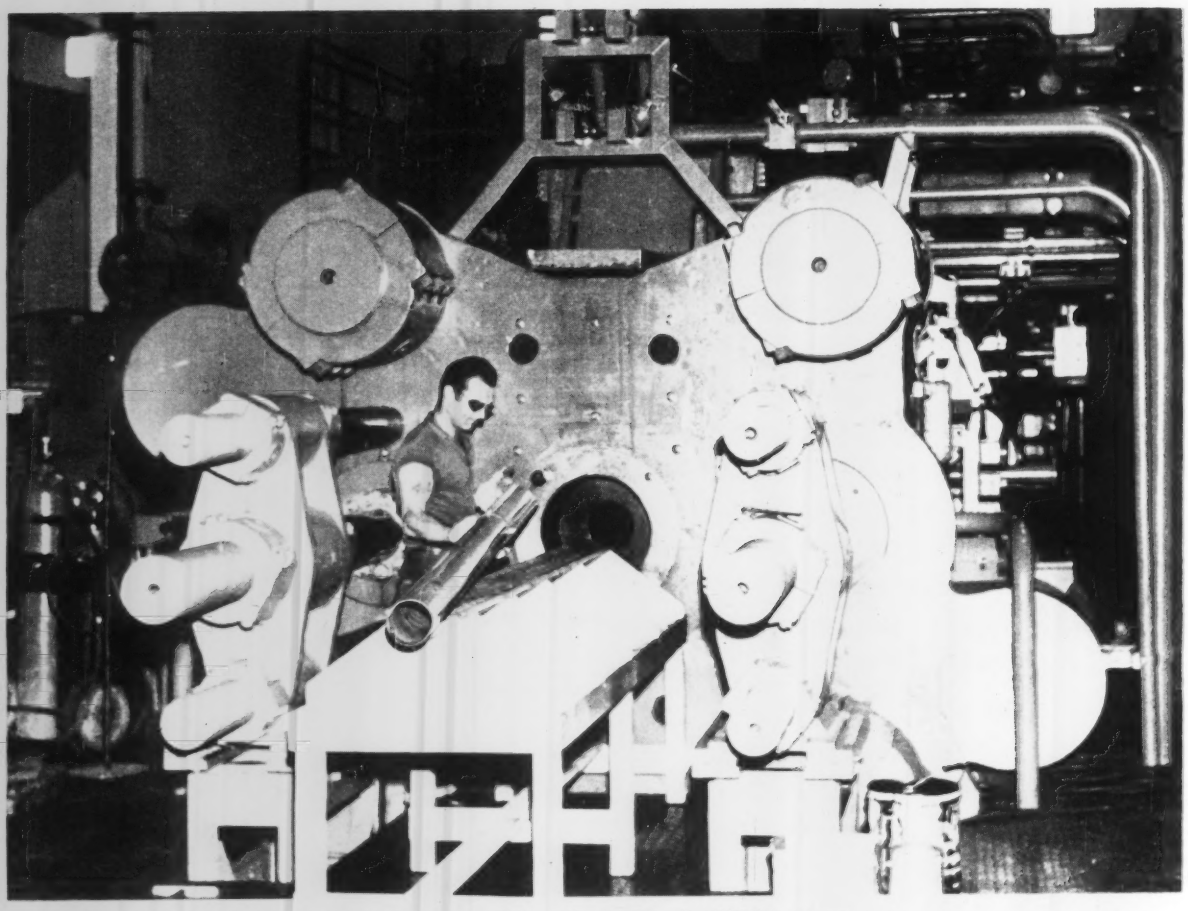
This manufacturer is using the process to make sprockets. Hubs are either brazed or staked securely to them. Savings are 75 cents per piece on large part illustrated

STAMPING 8-tooth sprockets reduces costs 41 per cent at Dayton Rogers Mfg. Co., Minneapolis. The unit cost is $1.10 (in lots of 400), vs. $1.85 before. The part is used with #1 ladder chain.

A machined hub is attached to the stamping. Only one side of the blank must be chamfered since the die side has enough pullover to make a desirable working part.

Two Methods — Sprocket blanks are: 1. Silver soldered or brazed to a shouldered, drilled, and tapped bushing. 2. Or staked to a bushing which has been straddle milled with two flaps (see above), a method which introduces even greater savings.

On an 8-tooth sprocket, costs are reduced from 95 to 45 cents per piece, a saving of 52 per cent.



Sidewinder missile motor tube being removed from Hunter Douglas 3500-ton press

Impact Extrusion Takes on

Complex shapes are being produced in the heat treated temper with tensiles of 80,000 psi. Biggest use is in missiles. Automakers are eying impact forged pistons

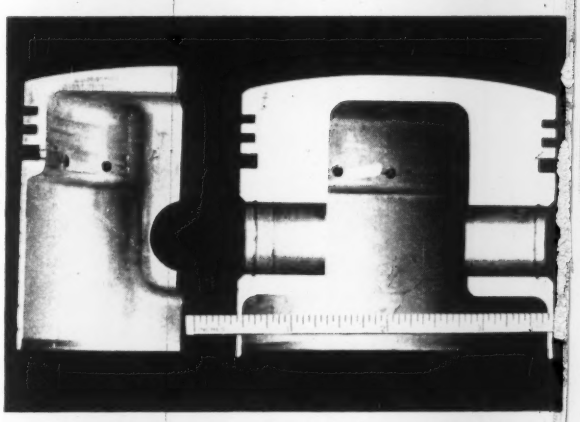
IMPACT EXTRUSION of aluminum has progressed from small, simple parts and soft alloys to longer, larger, and more complex parts in stronger, heat treatable alloys.

Several examples were cited by R. A. Quadt, vice president, research and development, Hunter Douglas Corp., Riverside, Calif., at a recent meeting of the Society of Automotive Engineers:

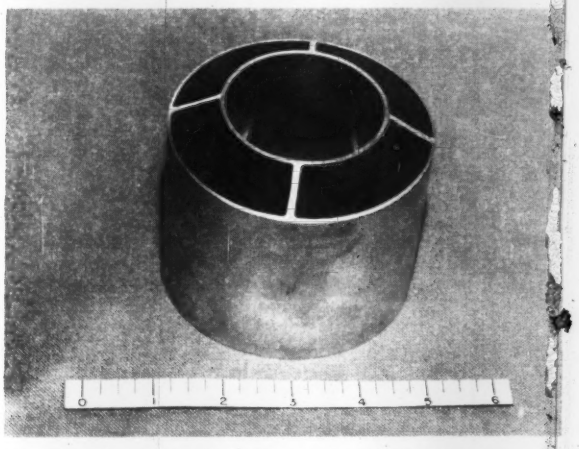
The 5-in. diameter motor tube for the Sidewinder missile is extruded in one piece. The part must meet requirements of 80,000 psi tensile strength, 72,000 psi yield strength, and 7 per cent elongation.

One of the most complex extrusions to date is a tube 100 in. long with walls 0.050 in. thick. The part is extruded in alloy 2014-T6 with one end closed, internal and external bosses, three internal ribs varying in size, and an external rib.

Potential in Auto Industry—Automakers are eying an impact forged aluminum piston for future models. Although cast pistons have given excellent service, the extrusion technique promises valuable extras. They include inherent lower cost, fewer machining rejects, reduced maintenance on automatic



Impact forged piston is cut to show structural details



One-piece heat treated impact replaced six-piece assembly

Two complex 2014-T6 extruded tubes joined by a dovetail

Hard Alloys

tools, and lower unit piston weight due to higher strength.

Hunter Douglas has impact forged pistons with these properties: 64,000 psi tensile strength, 54,000 yield strength, and 8 per cent elongation. Brinell hardness is 110 to 120. Properties were determined after solution heat treating, quenching, and a complex aging treatment which included stabilizing at 400° F.

The test pistons were machined and fitted to a V-8 engine. After 50 hours of running time, mostly at full throttle, the pistons showed no sign of wear and no change in dimensions or hardness.

Techniques Have Improved—Mr. Quadt credits progress to improved techniques in blank production, new lubricants and better application methods, more rigid tooling, and fast acting presses.

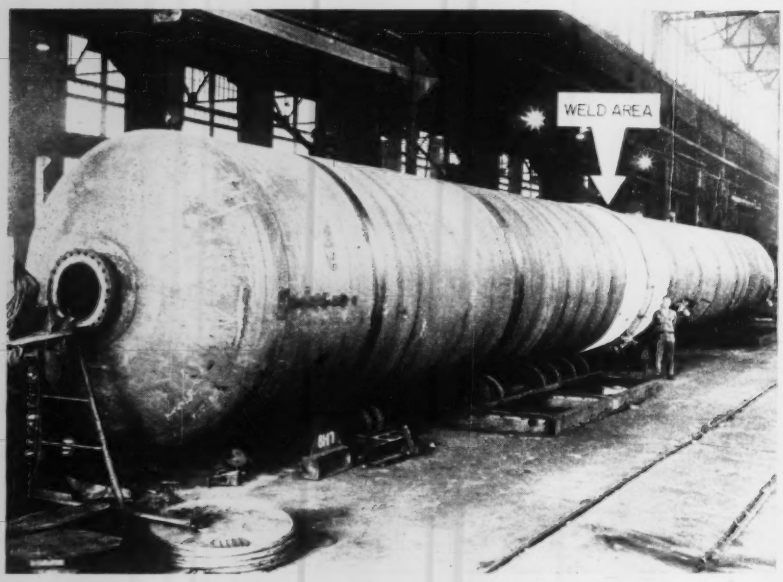
The 3500-ton extrusion press at Hunter Douglas can produce parts up to 20 in. in diameter. Maximum production is 60 parts an hour. Such equipment has brought down part costs. Production quantities of complex shapes can be supplied in the heat treated temper with 80,000 psi tensile strength at only slight additional cost over the commercially pure 1100 alloy with its 23,000 psi tensile strength.

High Temperature Impacts—Metallurgical developments have come along with the other advances. One such development is sintered aluminum powder (SAP). The material is pure with each grain coated by an oxide film. The powder is compacted and hot extruded to produce a bar or shape for subsequent processing.

SAP retains unusual strength at elevated temperatures. Tests at 750° F on 12 per cent oxide material show 17,000 psi tensile strength, 14,000 psi yield strength, and 8 per cent elongation.

Future Is Big—Developments are coming fast. Clad impacts, coextruded impacts, impacts with inserts, and more are available to the imaginative designer. Other techniques are apt to evolve when a design or application engineer brings his problem to the extruder.

Experience indicates that strong, lightweight, impact extruded parts may more than compensate for additional cost through elimination of costly machining operations.



Covered weld area can be seen at center of 114-ft storage tank

Coil Stress Relieves Weld

Because its furnaces couldn't handle a huge workpiece, this firm applied an on-the-spot resistance heating wire setup. Cost savings were an added benefit

CONVENTIONAL heat treating furnaces were too small to stress relieve a weld on a storage tank 114 ft long and 10 ft diameter. Richmond Engineering Co., Richmond, Va., turned to resistance wire.

The chrome-nickel wire is covered with ceramic insulating beads. (Known as Heat-O-Coil, it is manufactured by Arcos Corp., Philadelphia.) Four 100-ft lengths of the 1/8-in. material were wrapped around the tank, covering 3 in. either side of the weld.

To control the heating and cooling rate, the weld area (inside and outside) was sandwiched between two blankets of insulation—corrugated asbestos paper and wire-meshed rock wool. Thermocouples were spaced 90 degrees apart on the inside of the weld seam and attached to recording equipment.

Heating Cycle Initiated—Applying 240 volts (dc) across the heating coil terminals, the four paralleled lengths of coil drew about 56 amperes each. The temperature increased about 400° F an hour to 1100° F before the generator was adjusted to 190 volts and 190 amperes.

After 1 hour at this level, the power was shut off, and the insulation retained enough heat to maintain the desired cooling rate without power application.

The cost of stress relief was reported to be less than one-tenth that of induction heating. The tank (0.937 in. thick) was made of Type A212, Grade B steel.

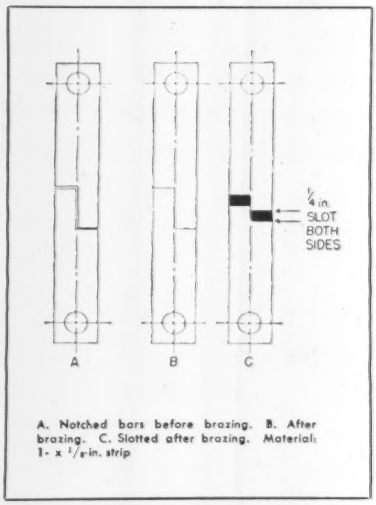
Proposes Braze Test

Company claims present procedures give variable results. Metal distortion is eliminated

BRAZING people need a better standard for shear tests, say F. M. Miller and R. L. Peaslee, Wall Colmonoy Corp., Detroit.

Reason: A brazed joint can show shear strengths of 10,000 to 65,000 psi, depending on the sample and test you select.

Propose Method—Wall Colmonoy recently suggested a different approach to members of the American Welding Society at their annual convention in St. Louis. Samples are 1-in. steel strips, 1/8 in. thick, separated with a kind of "Z" cut (see illustration), and brazed edgewise. The final step: 1/4-in. notches are cut from the sides to the center line, leaving a brazed test area 1/8 in. square at the center. Each strip is ground smooth to remove excess brazing metal.

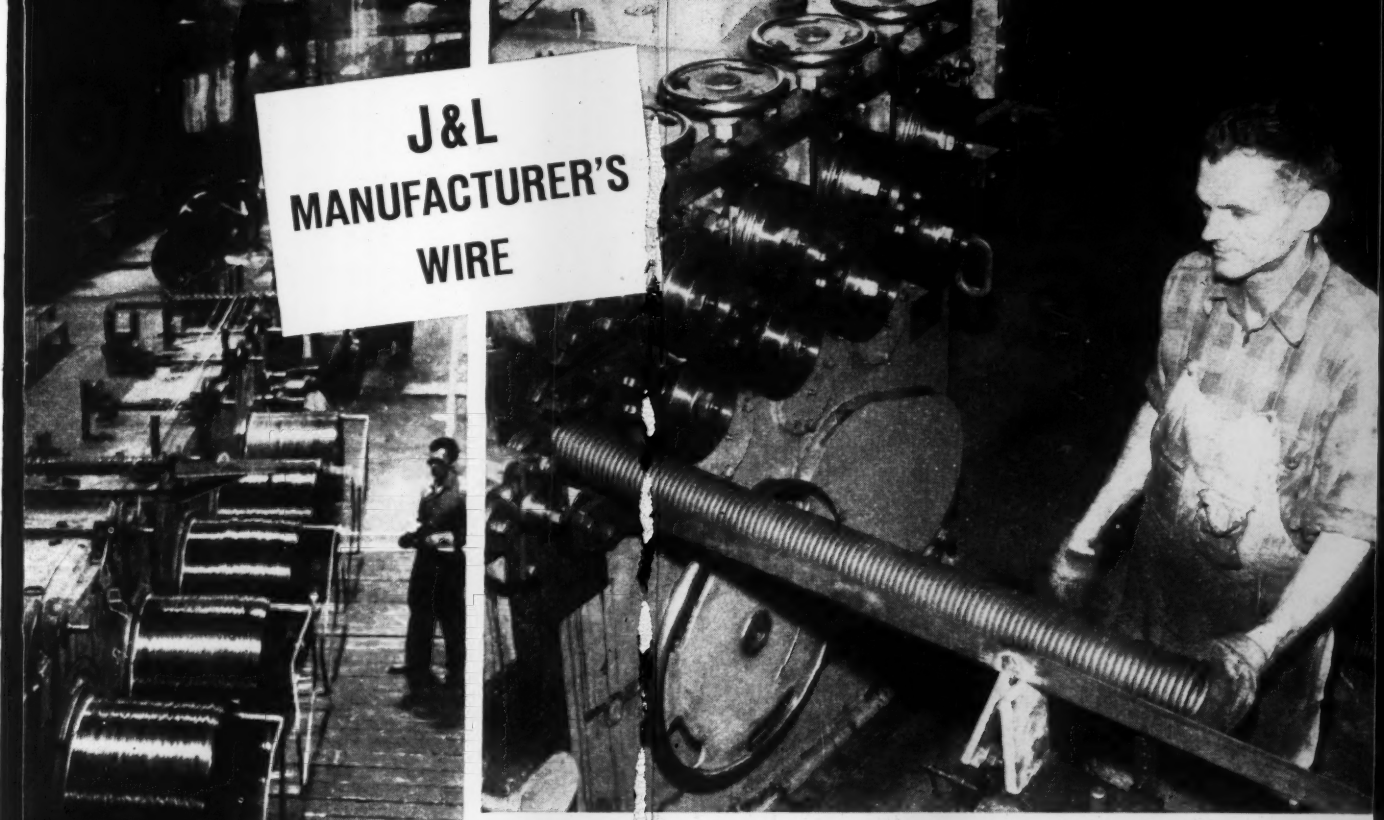


A. Notched bars before brazing. B. After brazing. C. Slotted after brazing. Material: 1- x 1/8-in. strip

NOTCHED STRIP
. . . gives better results

One of many advantages claimed: The test area is only one-half the yield point of the metal, eliminating base metal distortion. (On ductile metals that's reduced to about one-fourth the yield strength.)

Comparison — Many present methods distort the base metal. Although admitting the proposal can be improved, they feel direction is right.



Crawford Door Company uses J&L superior quality, oil-tempered spring wire in 18 sizes for torsion and extension springs. Springs range from a few feet long to giants over 12 feet long, capable of raising 3,500-pound industrial doors without effort.

"UNIFORM HEAT TREATING AND TEMPERING PAYS OFF IN SUPERIOR J&L SPRING WIRE"

...says Crawford Door Co. official

"J&L has a superior spring wire because of the control they are able to maintain in their heat treating and tempering operations," reports Mr. Jerome Fansler, vice-president of the Crawford Door Company, Detroit, Michigan.

"J&L spring wire is properly tempered. This means the wire will coil uniformly. There are no surface imperfections or potential breaking points."

Crawford Door uses J&L oil-tempered medium basic spring wire for torsion and extension springs. They buy 18 sizes, ranging from .192 (13/64") to .293 (19/64").

Every coil of J&L spring wire is thoroughly tested for uniformity of physical and dimensional properties. This uniformity can speed your production, reduce the number of rejects. J&L has complete control of wire quality from ore through finished product. When you specify J&L, you are sure of wire that is tops in quality yet competitive in price.

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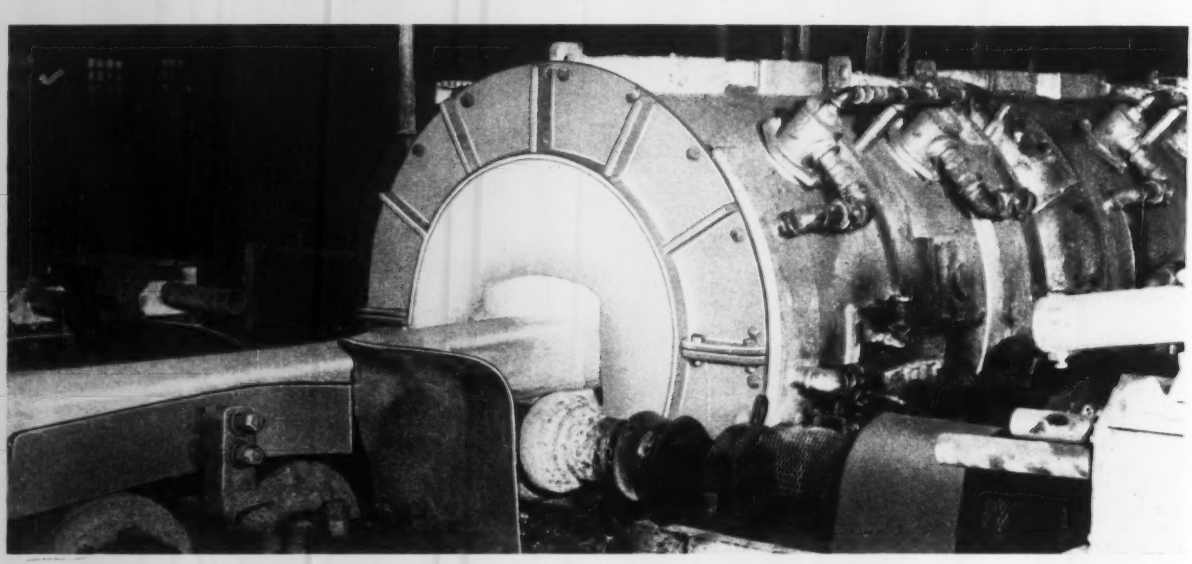


Fig. 1—Bloom enters a continuous furnace between blooming mill and rail mill which reheats up to 198 tons of blooms an hour

Where Faster Heating Saves

In steel mills, where minutes are dollars, high speed heating methods for billets, tubing, forgings, and strip point the way to lower costs and higher quality

By C. A. McFADDEN
Manager, General Industry Div.
Selas Corp. of America
Dresher, Pa.

MANY PEOPLE still think of heat processing of metals in terms of the blacksmith shop. This leads to the fallacy of defining heat processing solely in terms of those twin bugaboos, fuel cost and thermal efficiency.

Rating a furnace on fuel efficiency and fuel cost can be deceptive. In fact, efficiency is misconceived if restricted to the ratio of heat input and heat absorbed. Yet, this is done every day.

One can justifiably establish such "efficiency" ratios for a single-purpose operation such as a compressor, but most continuous furnaces are not single-purpose devices, and should not be so evaluated.

For Example — When rolling a large ingot into a bloom, the surface cools both by radiation and by contact with the rolls. Any attempt to finish roll this bloom would produce a defective product due to nonuniform heat distribution in the bloom during final rolling stages. So, the conventional practice has been to remove the blooms from the rolling process, charge them into batch-type reheating furnaces, and reheat and soak them.

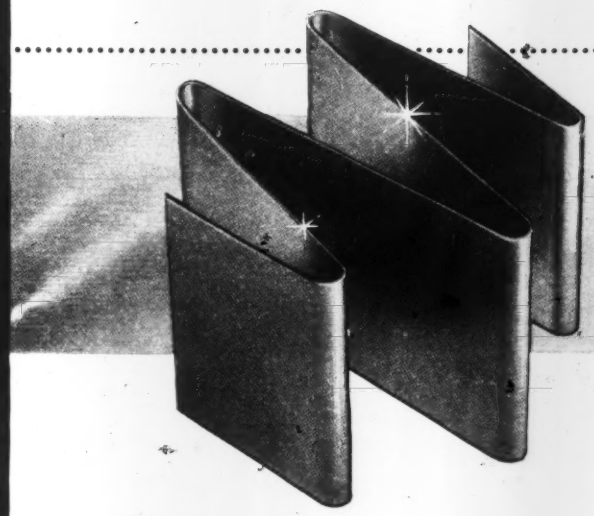
The reheated bloom is placed back on the mill for final rolling. The practice involves at least two handlings by mechanical manipulators, and a series of batch furnaces. In spite of heating times, as long as 1 hour, it still does not produce uniformly heated blooms because they rest on a furnace hearth during reheating.

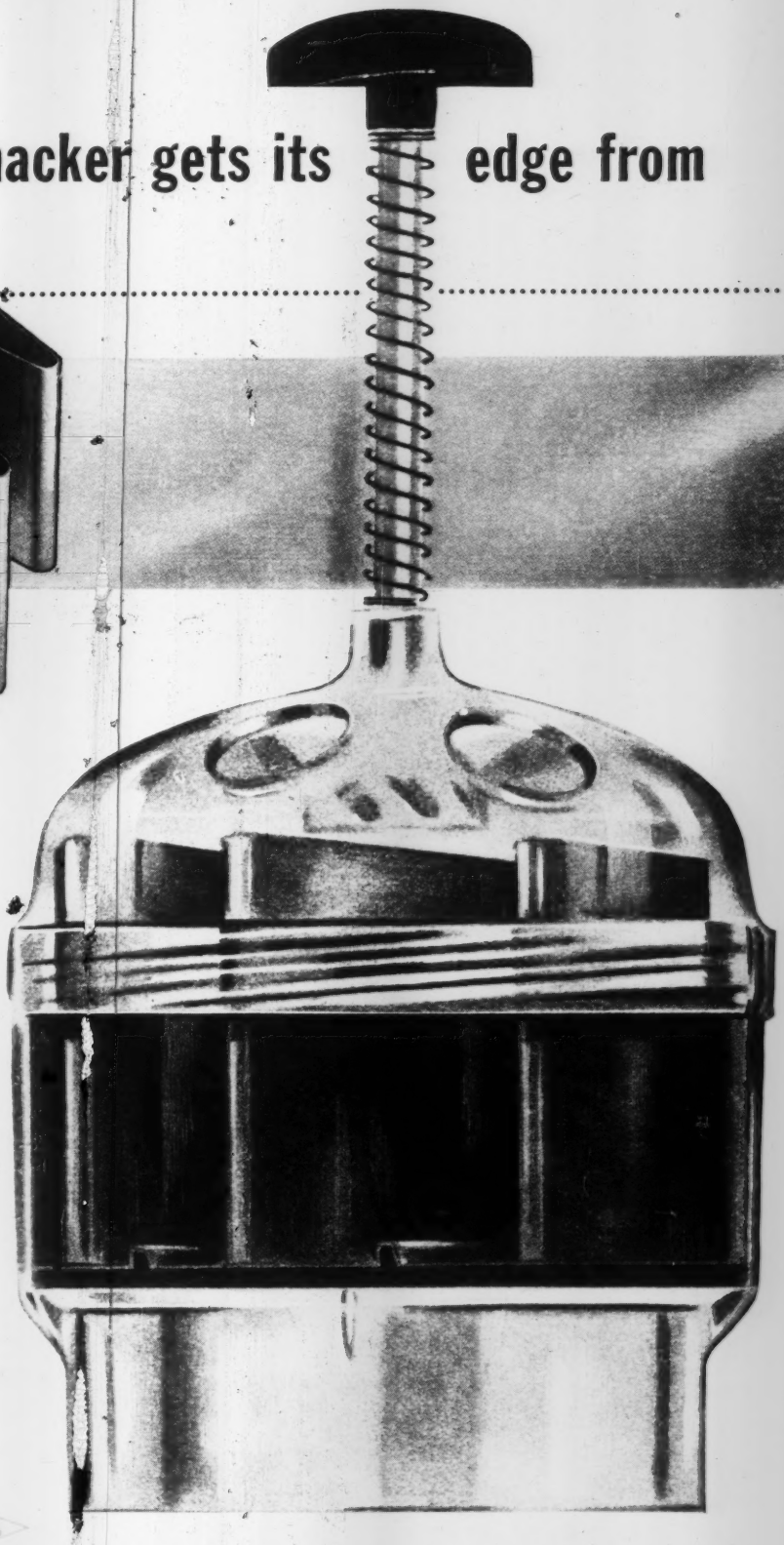
Speed It Up—Suppose we introduce a continuous furnace between a blooming mill and a rail mill which performs this reheating "on the fly" at a production rate up to 198 tons an hour. The process is entirely automatic, and the temperature of the bloom—not the furnace—is controlled by a radiation pyrometer. No labor is involved, and if no bloom enters the line, the furnace automatically goes on low temperature setting.

The furnace is, of course, self-emptying, the bloom being handled by conveyor rolls.

Fig. 1 shows the bloom which has a cross section of 9½ in. by 11 in. entering the furnace line. A reasonable value for the bloom, at this stage of processing, might be $38 a

Sensational Blitzhacker gets its edge from





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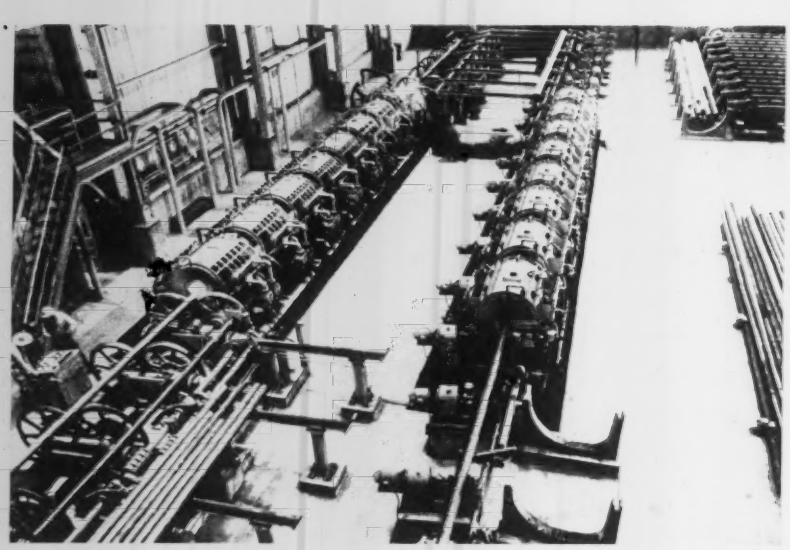

Fig. 2—Casing for deep oil wells, made of low alloy, seamless tubing, is raised to tensile strengths of 140,000 psi in these furnaces

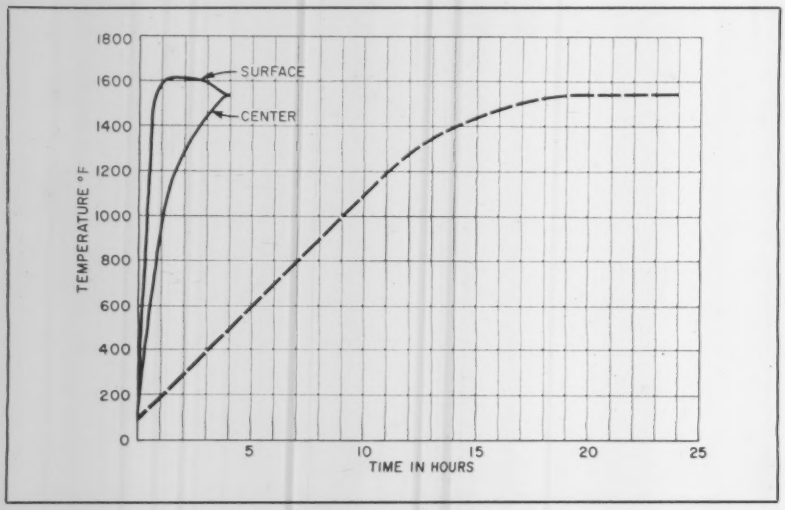

Fig. 3—Fast heating of die blocks for hardening resulted in a reduction of process time from 24 to 4 hours

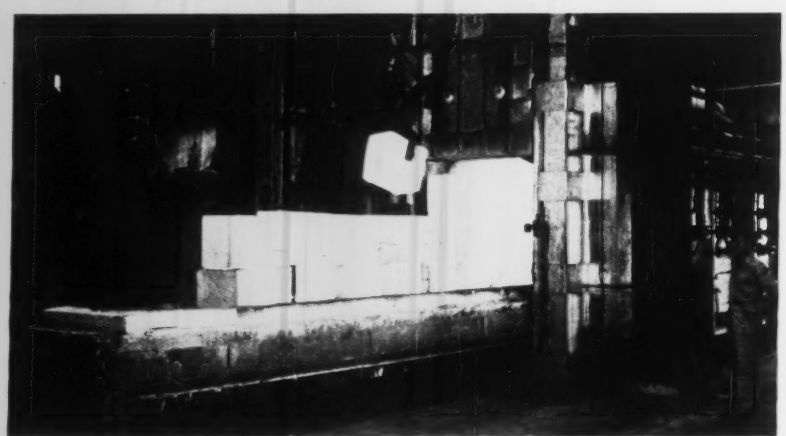

Fig. 4—This fast-heating furnace hardens the same tonnage of die blocks as seven conventional furnaces of the same size

ton, which means $7524 an hour. For a 40-turn month, that's a production value of $2,400,000, which is more than 12 times the cost of the continuous reheating furnace line. The average fuel consumption is 420,000 Btu per ton, which figures out to a reheating fuel cost of 21 cents a ton.

But Watch Costs—Let's take a look at the economics of this installation: Fuel cost is less than 0.6 per cent of product value or, for the 40-turn month, about $13,300. (These costs are obtained without heat recuperation.)

Suppose we add recuperation and increase fuel efficiency by 50 per cent. That would save $4440 a month but at substantial additional equipment cost. More than three years would be required to pay for the recuperation cost from the fuel savings — neglecting entirely the maintenance cost of recuperator equipment.

The Big Cost—Fuel efficiency is certainly of minor consequence in this process economy.

But look at material handling. It costs about $2 to pick up 1 ton of hot steel, transport it 100 to 150 ft and set it down again. On this basis, eliminating two handlings, we save $396 an hour, or pay for the new furnace in less than one and one-half months, or 60 turns.

After that a clear saving of $4 a ton is realized from this "paid for" continuous furnace, since its operating costs are certainly not higher than for a battery of batch furnaces.

Still More Benefits—A reheating time of 3 minutes against ½ to 1 hour at 2250° F accounts for a scale saving of about 1.5 per cent or 3 tons an hour at $38 a ton. That means $36,480 per 40-turn month, or three times the total fuel cost.

Product quality improves because of reduced grain growth. Decarburization is reduced due to short heating time. Again, in comparison with other factors, fuel efficiency alone is inconsequential.

Of course, the equipment has to be well-designed and well-built. Production stoppages from mechanical or operational failure, totaling less than 30 hours, could represent a loss in production value equal to the total equipment cost. When continuous furnaces are interconnected with mills or other processing operations, reliability and performance

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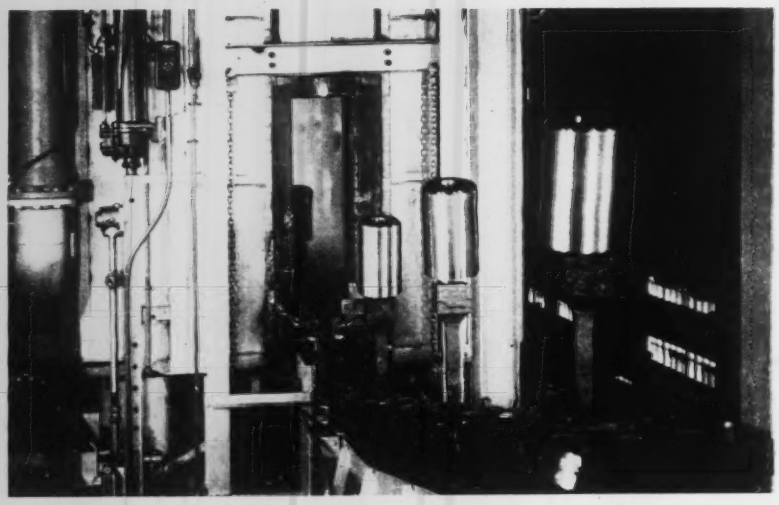


Fig. 5—Steel extrusion billets are conveyed through this furnace without touching walls or hearth to achieve temperature uniformity

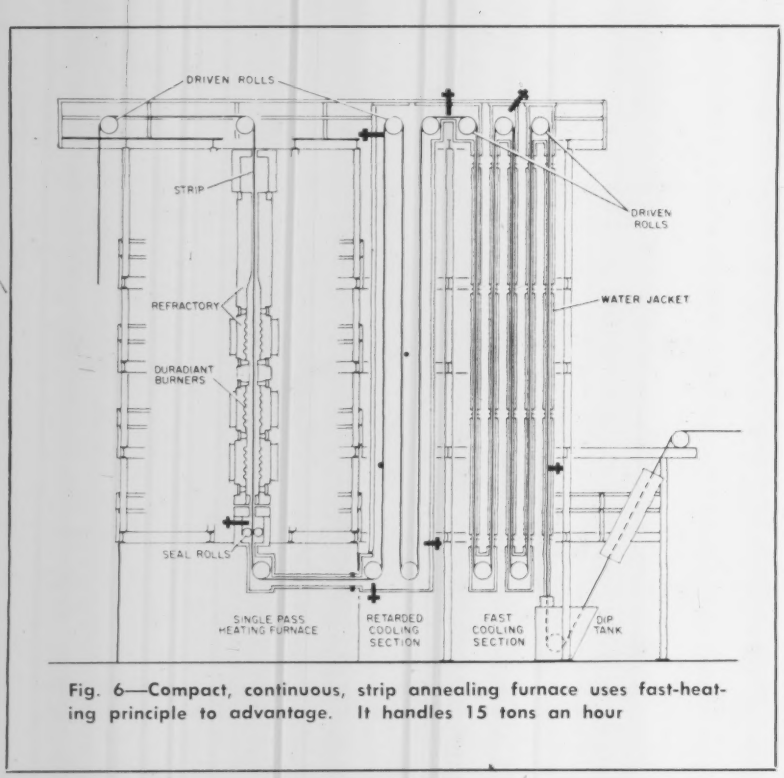


Fig. 6—Compact, continuous, strip annealing furnace uses fast-heating principle to advantage. It handles 15 tons an hour

must receive top consideration.

Another Example—In Fig. 2, we have an installation for processing high strength, deep well casing. By precise heat treatment, it is possible to improve physical properties of low-alloy steels to make them suitable for the extreme pressures and depths of our oil wells. Casings, 2⅜ in. to 9⅝ in. in diameter, having tensile strength as high as 140,000 psi, are regularly produced on a continuous basis.

The casing enters the furnace line, is heated to hardening temperature (1650° F), then quenched immediately. During the entire forward movement, the casing is rotated to maintain straightness.

Two Furnaces — Following the quench, the casing is drained, then immediately drawn or tempered in a similar furnace line. Both heating processes are short cycle, producing a fine grain structure with optimum physical properties. As might be expected, uniformity and control are of foremost importance.

With this heat treatment, the value of the casings is increased by about $50 a ton. The line is capable of producing 7 tons an hour of medium size casings, which means a $350 an hour net increase in product value. In other words, this single, precisely controlled heat process converts $130-a-ton raw material to a premium product valued at $180 a ton. During a 40-turn month, it adds value of $112,000, or about one-fourth the total equipment cost, while the total product value per month at the exit is more than the cost of the equipment.

If this is contrasted with the first example, where product value per month was more than 12 times the furnace cost, the importance of sound and complete economic evaluation can easily be appreciated. When a $50 a ton increase in product value can be obtained for a fuel cost of only $1.80 a ton for the complete heat treating cycle, we have another example of the minor importance of fuel cost.

Why So Fast?—If such results can be obtained by fast, continuous heating, it seems logical to ask why this wasn't done long ago. The answer seems to lie in the misinterpretation of long experience.

Mistaken ideas about heating potentials became accepted as rules and standards of design, even material specifications. For example, 1 hour per inch was the "rule" for heating steel to forging or rolling temperature. Bad or nonuniform heating techniques—the only ones in existence because of the state of development—were translated into metallurgical results, and retarded progress for years.

Compare—The dotted curve in Fig. 3 shows the heating cycle formerly specified for an 18-in. thick die block. The solid lines represent the heating operation now performed on the same block. Thousands of tons of first quality blocks have been produced at one-sixth the former operating cycle.

One furnace, shown in Fig. 4 with the hot charge on the car, produces the same tonnage as formerly was produced in seven furnaces —with less fuel, less scale, less labor, and less material in process. The reasons: Uniform heating, program control regulated for heat absorption capacity of the work, and maximum permissible temperature of the furnace.

The fuel cost again is about $1.80 a ton, but product value in six turns exceeds the cost of the furnace, and one spoiled furnace charge is worth more than 60 times the total fuel cost.

Heavy Sections—With fast cycles established, it becomes feasible to consider heating heavy sections on a continuous basis with many associated advantages and benefits. The steel and alloy billet heating furnace in Fig. 5 provides a good example.

The billets are hung on welded studs, and carried through the furnace by a continuous conveyor at the rate of 8 tons an hour. The billets do not touch walls or hearth, and are therefore in an ideal position to be heated uniformly, a basic requirement for the extrusion process which follows.

Heating is done by radiant burners in the side walls, and only products of combustion, no flame, are inside the furnace chamber surrounding the billets, so that 80 per cent of the heat is supplied by radiation. The product value of 7 hours' operation at rated capacity, represents more than the cost of the furnace, due to the high cost of the extrusion alloys.

Strip, Too—Changing from heavy sections to light steel sections we find a similar radical departure from conventional practices and concepts. Continuous bright annealing of steel is an accepted process. Today, it is in operation at speeds up to 1000 fpm on steel strip 0.010 in. thick by 48 in. wide. Higher speeds are contemplated.

Those installations require a high capital investment, $1,500,000 and up, but they are being made, primarily because of product improvements.

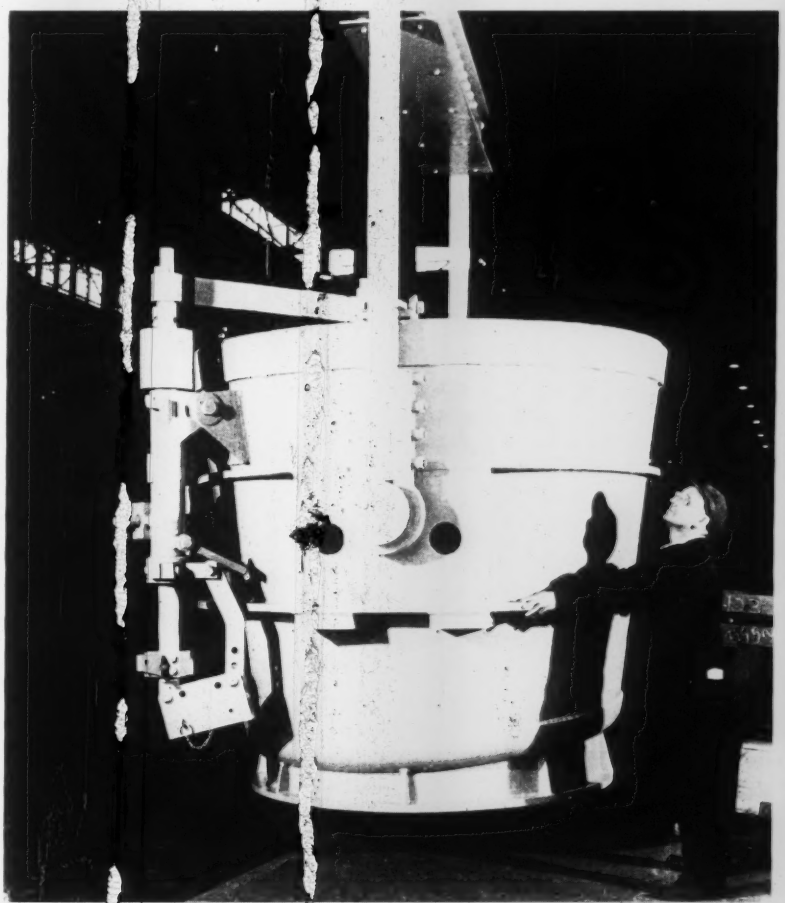
Benefits—When tin plate stock is annealed in coils or sheet packs, annealing cycles up to 200 hours long are necessary to penetrate the coil. In the continuous process, the total time cycle has been reduced to 4 seconds heating, and 45 seconds cooling, and each foot of strip goes through identical treatment conditions. That brings greater uniformity of structure and hardness.

This fast-treated steel is harder than conventionally annealed strip yet, contrary to the book, the harder steel has better deep drawing qualities and its increased stiffness permits the use of lighter gages for tin cans and other containers. The continuous furnace therefore produces results that go considerably beyond mere heating to annealing temperature.

Savings Again—One such continuous furnace can be seen in Fig. 6. For reasons of diversification, flexibility, economy, and capacity, there are four such lines side by side in this one plant—and one of these lines has produced an average of 17 tons an hour over a period of a month.

On that basis, one such line—which is not the highest speed line in operation—has the capacity to handle, conservatively, a product value of over $800,000 a month, or almost double the cost of the continuous furnace equipment.

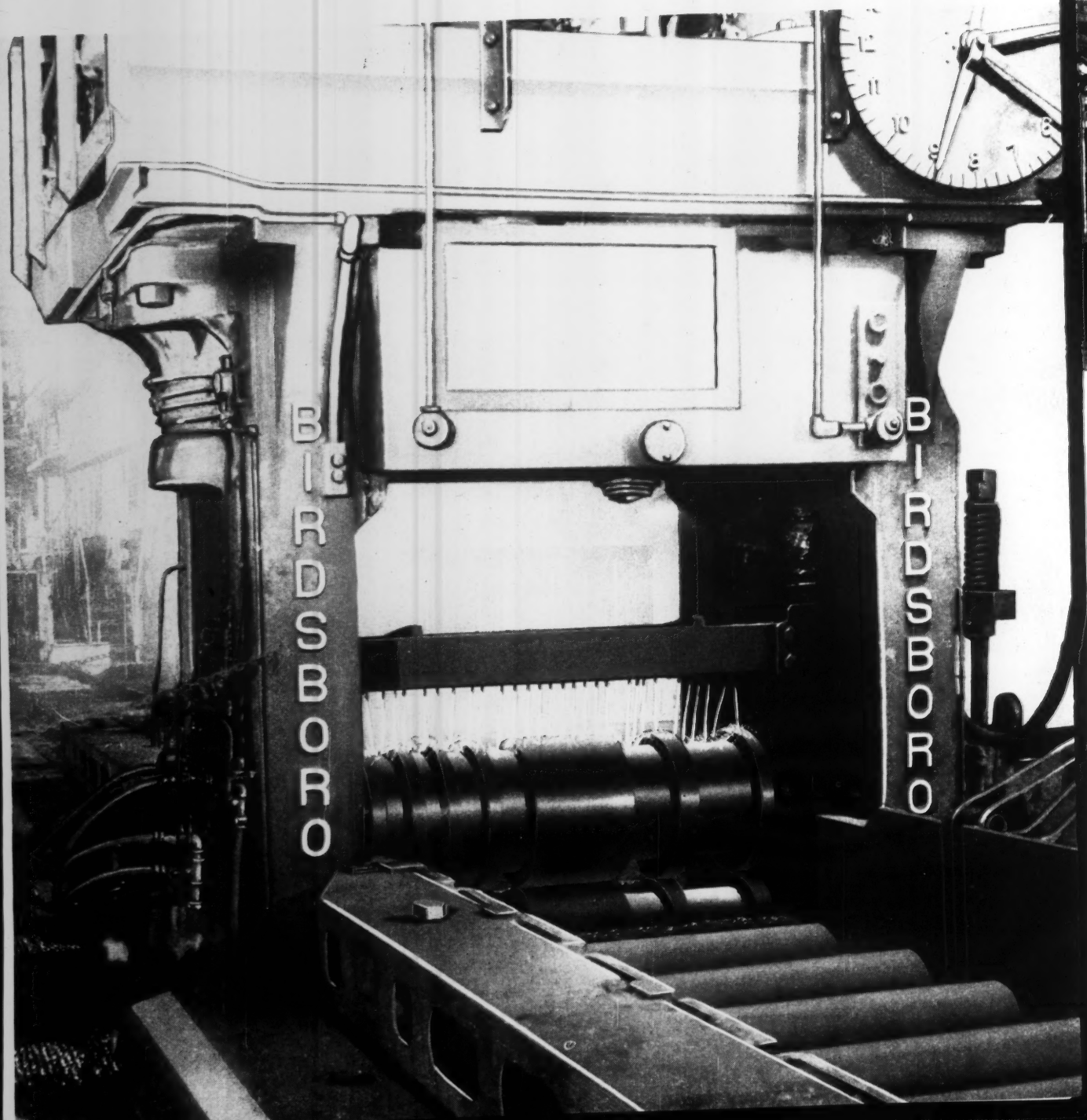
The fuel cost for this production amounts to $9400 a month, which, with a minor addition to the existing equipment, can be lowered to less than 1 per cent of product value. But product value alone represents over $1200 an hour which again puts emphasis on simplicity and reliability of the equipment. It is the reliability factor that so often controls how many different operations can safely and justifiably be put into a single, continuous production line.



THIS WELDED STEEL LADLE weighs 35 tons and will be used for pouring steel into a vacuum chamber where ingot molds are filled. Primary purpose of the ladle, made by Blaw-Knox Co., Pittsburgh, is to maintain vacuum during the pouring. The unit is equipped with the firm's Autopour mechanism for remotely controlling the ladle stopper.

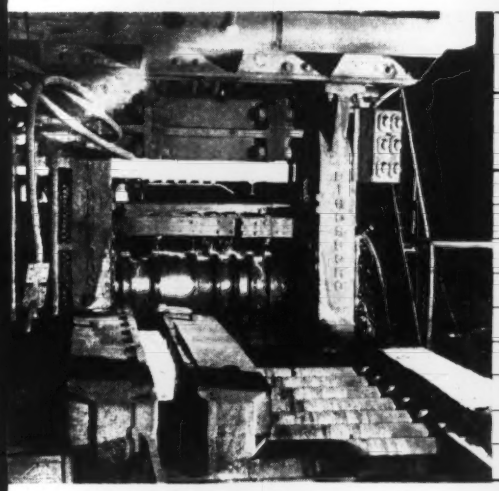
BIRDSBORO

give users added flexibility,



2-High Reversing Mills...

new profit potential



Check These Applications of BIRDSBORO 2-High Reversing Mills in Operation:

Size of mills	Primary blooming & slabbing	Secondary billet & slabbing	Structural roughing	Strip & skelp roughing	Merchant bar & rod roughing	Tube & extrusion Rough finishing
36"	✓	✓				
35"	✓					
34"		✓				✓
32"	✓	✓	✓			
28"					✓	
26"	✓	✓		✓	✓	✓
22"	✓					✓
20"	✓			✓	✓	
18"	✓					

● Ranging in size from 36" down to 18", these mills are improving production records in plants in the United States, Canada and South America. Almost every important name in the steel industry is listed among the users of Birdsboro mills.

Among the many features is VARIABLE SPEED, an inherent characteristic of the 2-high reversing mill. Here is why it is important:

1. spread may be controlled by varying the rolling speed.
2. difficulty in entering hard or slippery grades can be overcome by entering at slow speeds.
3. production can be maximized by taking initial passes at low speed, where entry is difficult, and speeding up on the final long passes.
4. slow speeds can be used to avoid rupturing the surface of tender grade ingots, until sufficient work has been done to permit faster rolling.

This comment about a Birdsboro 2-high reversing mill appeared in a national engineering magazine:

"... I find it very difficult when talking about this two-high mill to keep my enthusiasm under control. I honestly think this is one of the finest pieces of equipment that it has ever been my pleasure to work with. It is so completely flexible."—Superintendent of one of the leading specialty steel mills in the Eastern U.S.

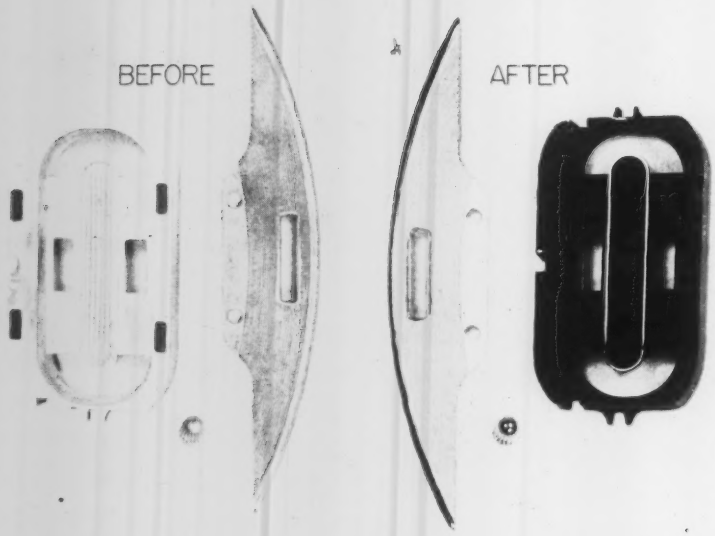
Your nearest Birdsboro mill machinery representative can give you a lot more of the details on our handling of special engineering problems in rolling steels. *Main Office, Engineering Department and Plant:* Birdsboro, Pa., *District Office:* Pittsburgh, Pa.

MM-70-18

BIRDSBORO

STEEL FOUNDRY AND MACHINE CO.

STEEL MILL MACHINERY • HYDRAULIC PRESSES • CRUSHING MACHINERY • SPECIAL MACHINERY • STEEL CASTINGS • Weldments "CAST-WELD" Design ROLLS: Steel, Alloy Iron, Alloy Steel



Parts take plating and painting without buffing or polishing. Before and after views show: A retainer ring on the 1958 Cadillac instrument panel (outside), small knobs for panel controls, an Oldsmobile trim plate that fits under the speedometer (center)

Polished Dies Cut Costs

Surface of the die determines if it will be necessary to finish parts before they are coated. Smooth dies eliminate the need for polishing and buffing

BY FINISHING its cold chamber diecasting dies to a 3 to 4 microfinish, AC Spark Plug Div., General Motors Corp., Flint, Mich., eliminates polishing and buffing operations on zinc parts for instrument panels (pictured above).

Average savings come to 11 per cent. The GM division expects to use the method on several more instrument panel parts during 1959.

Preparing the Die—Usually, die surfaces are honed to a 15 to 20 microfinish which is adequate if polishing and buffing follow. Under the new system, dies are finished again with a 600 grit hone, then polished with diamond dust. A dry white rough polish completes the preparation.

Rahe Speckman, methods engineer, points out: "While the die cycle life sometimes means we have to do more buffing as the die wears, we have found that our ultimate savings in polishing and buffing make die finishing worthwhile."

If this method works successfully in 1959, die drawings will designate the microfinish required.

Ease Slipper Wear

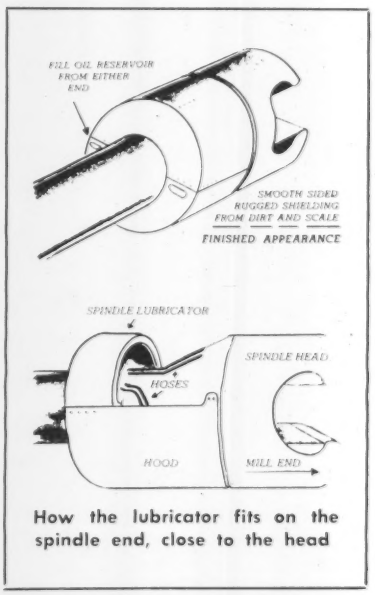
Unit mounted on rolling mill drive spindle meters lubricant to pressure areas of bearings

A SPINDLE LUBRICATOR has been designed to bring the advantages of centralized lubrication to a costly steel mill maintenance problem—the spindle slippers on reversing, blooming, and slabbing mill drives. Developer of the system is Trabon Engineering Corp., Solon, Ohio.

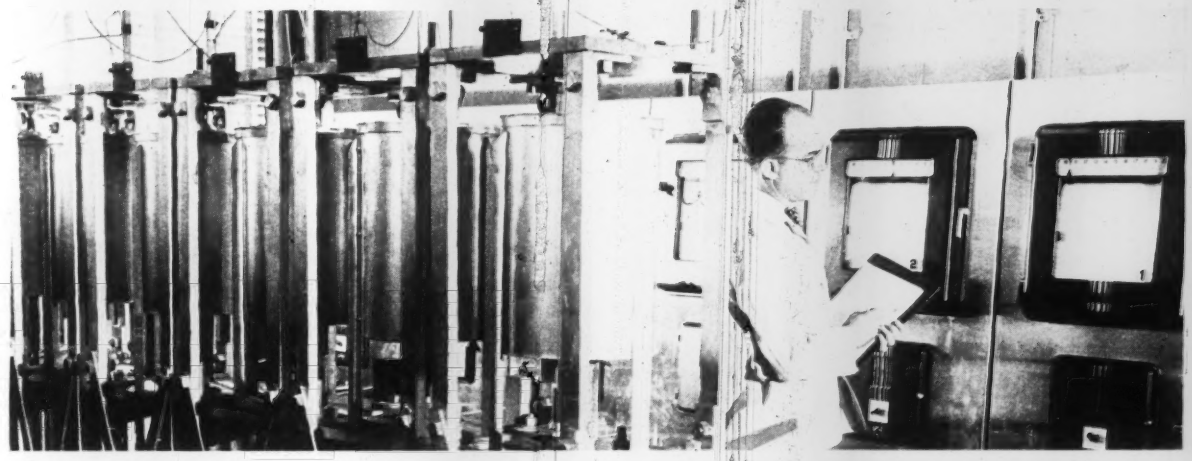
The Trabon "unitized spindle lubricator" is a self-contained automatic system which delivers a measured amount of lubricant into the pressure areas of the slipper. It is mounted directly on the spindle under a protective hood.

Big Savings — In one mill equipped with the lubricator, slipper life was doubled. Tonnage rolled per slipper set (on the mill end of the spindle) jumped from 125,000 to 250,000 tons. Lubricant consumption dropped from 1 barrel to a few quarts per shift. Decrease in shock loads transmitted to bearings resulted in a 400 per cent increase in bearing life.

Trabon engineers say the lubricator can be adapted to any reversing, slabbing, or blooming mill spindle. They estimate that its installation will save a steel mill $25,000 a year.



How the lubricator fits on the spindle end, close to the head



Control units keep specimens close to set point

Tests Demand Constant Temperatures

ASTM says stress-rupture and creep testing results depend on them. Location of the thermocouples is important to obtain good control and reliable results

SMALL temperature changes cause large variations in the creep rate of metals (a function of strength). It means that temperature control is vital to the accuracy and consistency of stress-rupture and creep testing.

Westinghouse Electric Corp., Lester, Pa., has 30 stress-rupture machines which are combined with Speedomax H, a control unit built by Leeds & Northrup Co., Philadelphia. They are used for acceptance testing of large turbine rotor forgings—also cylinder castings, piping, fasteners, and forged materials for high temperature applications.

Specs—In stress-rupture analysis, the permissible deformation is high and may not be limited. The chief criterion is that rupture does not occur during the life of the part. Tests are made with a constant tensile load and temperature.

Thermocouples are attached to the top, center, and bottom of the specimens. Top and bottom couples check the specimen's temperature uniformity, and the center unit is part of the control system.

The American Society for Testing Materials emphasizes the importance of temperature control in rupture testing. The society states that variations from the nominal temperatures should not exceed ±5° F up to 1200° F and ±10° F for higher temperatures (ASTM designation E85-50 T).

Suggested Procedure—R. S. Day of Leeds & Northrup recommends attaching the control thermocouple to the test piece: The unit adjusts the specimen's temperature rather than the furnace's. The Speedomax system is credited with holding to ±1° F.

On initial startup, the controller applies full power to the furnace until it reaches a point below the desired level. If the specimen's temperature is not uniform, power input to the top and bottom sections of the furnace is balanced by adjusting the autotransformers. Once the furnace is advanced to the set point and the controller is tuned to the process, further adjustment is not necessary.

Temperature controlled tests are widely used:

Research—Test runs of 300 to 400 hours are done at Arcos Corp., Philadelphia. The company is working on a creep testing program for the AEC aimed at developing a welding electrode for the fabrication of high pressure stainless vessels.

Tests are run at 1000, 1200, and 1300° F. Regular checking shows that temperatures are held close to the set point.

Production — Twenty-five testing machines are installed at Wyman-Gordon Co., Worcester, Mass., to test titanium and special alloy steel forgings for jet planes. A sample is taken from each forging and tested an average of 24 to 48 hours.

The control unit helps operators bring furnaces up to temperature in minimum time, and it speeds recovery after the sample change. Furnace temperatures are held within ±2° F, eliminating the need for manual readjustment and preventing overshoot of the set point.

Quality Control — The jet division of Thompson Products Inc., Harrisburg, Pa., tests bar stock against the vender specs as it arrives at the plant. Later, a random specimen of the completed turbine blade forgings is checked.

An average test takes 100 hours (parts are stressed to destruction). An operator uses a portable potentiometer to make a daily check of the apparatus. Readings check within ±2° F.

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PRECISION 1959 FLAT ROLLED METALS HANDBOOK

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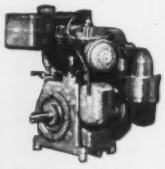
PRECISION STEEL WAREHOUSE INC.

3500 NORTH WOLF ROAD • FRANKLIN PARK, ILLINOIS

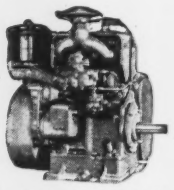
WHO specifies WISCONSIN heavy-duty Air-Cooled ENGINES?



• 4-cycle single cyl., 3 to 12½ hp.

A Good Question . . .

and here's the answer



• 2-cylinder, 10 to 18 hp.

• It's the seasoned "professionals" . . . qualified men like yourself, who *know engines* and the operating demands they must meet in rugged field service, who specify "Wisconsin Power" . . .

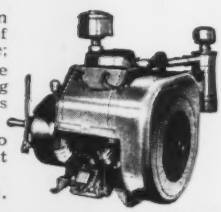
Men like *you*, who have had the opportunity to compare and weigh performance characteristics of engines on your own equipment, under your conditions;

Men like *you*, who appreciate the advantages of Wisconsin heavy-duty design and construction in all details . . . in terms of operating dependability; low-cost maintenance and long engine life;

Men like *you*, who know the value of Wisconsin High Torque engineering and performance . . . to give you the load-holding *Lugging Power* that hangs on through the shock-load pinches without stalling;

Men like *you*, who have learned from experience that there is no substitute for Wisconsin trouble-free AIR-COOLING . . . efficient at all temperatures from sub-zero to 140° F.

Write for Engine Bulletin S-223 for briefing on the full line (3 to 56 hp.). *All models can be equipped with Electric Starting.*



• V-type 4-cyl., 15 to 56 hp.

MOST H.P. HOURS

WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines

MILWAUKEE 46, WISCONSIN

A8-6178-1¼A2

Hail Columbium

Columbium by any other name irks metallurgists. The 30,000-member American Institute of Mining, Metallurgical & Petroleum Engineers has vowed to do away with its other name (niobium) forever: The lustrous, steel gray element shall be called columbium exclusively from now on, announces AIME's board of directors.

For more than a century, the metal has been known by both names. Its discoverer, Charles Hatchett, named it columbium in 1801 (after Christopher Columbus). But a British researcher, H. Rose, reported 45 years later that he had found a new metal and named it niobium; that metal was really columbium, AIME declares. Before the mistake had been cleared up, both names became popular.

AIME argues that the metal should be called columbium only. It gives these reasons: 1. Columbium-stabilized stainless steel is a fully accredited standard grade and ferrocolumbium is a recognized alloy. 2. Melting metallurgists call the metal columbium. 3. Columbium was its original name. 4. It should continue to be called columbium in honor of Columbus.

Installs Oxygen Plant

An oxygen generating plant has been brought into production at Granite City Steel Co., Granite City, Ill. Its output: About 60 million cu ft a month.

The gas is stored under pressure in banks of steel cylinders 80 ft high. It is distributed by pipeline to the steel plant. The new generator is being leased from Air Products Inc., Allentown, Pa., builders of the station.

Two Uses—Oxygen will create a hotter open hearth flame by accelerating combustion through the furnace burners. Normally, the flame is about 3000° F.

The second major use: Removal of carbon during the refining period. It is jetted on the open hearth bath with a lance extended from the furnace roof. Oxygen unites with carbon in the molten steel and leaves the furnace as carbon dioxide.

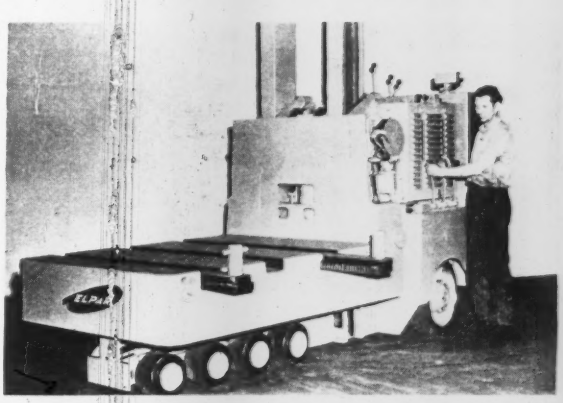
Truck Handles Heavy Dies from Sides or Ends

Dies can be positioned on and off either side, or the end of the platform of this 20,000-lb capacity die handling truck. Side die-handling permits locating the vehicle parallel with the press in narrow aisles.

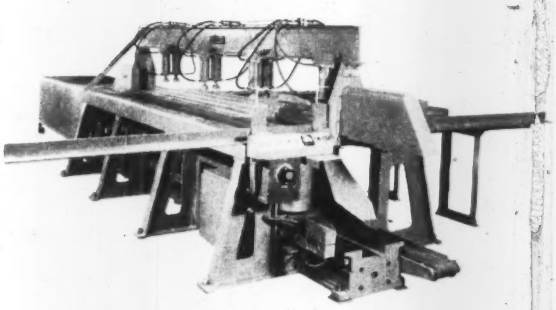
The Model E12-20 SER has a stabilizer bar which is quickly pushed out from either side of the platform to be butted against the press.

Die handling off the end is done with hydraulic cable winches that can be operated separately. Side removal is achieved with a dual set of adjustable pusher pins attached to corresponding hydraulic-operated bars which are below the truck platform.

The unit can be remotely controlled from either side. *Write*: Elwell-Parker Electric Co., 4205 St. Clair Ave., Cleveland 3, Ohio. *Phone*: Utah 1-6200



Saw Cuts Nonferrous Metals Accurately and Swiftly



The No. 838 heavy-duty production saw cuts aluminum, bronze, copper, brass, other nonferrous metals, and micarta. It is economical to operate, cuts fast on precision work, and is adaptable to many jobs.

The machine is built in any length from 4 to 40 ft in 4-ft increments. (Longer models can be obtained.) The arbor is driven by a 20, 30, or 40 hp, 1800 rpm motor that is totally enclosed and fan cooled. The feed motor, a 3 hp unit, provides speeds from 1 to 40 fpm.

A 5-ft fence, saw guard, splitter, and 16-in. carbide tipped saw blade are furnished. The feed motor is a 3 hp unit that gives speeds from 1 to 40 fpm. *Write*: Oliver Machinery Co., 1025 Clancy N.E., Grand Rapids, Mich. *Phone*: Glendale 6-1592

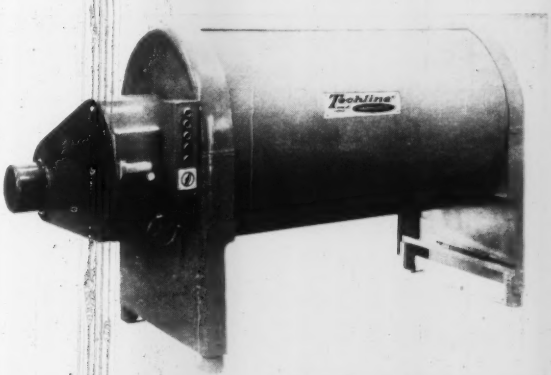
Barrel Finishing Machine Is Stable throughout Cycle

The Model 30 series of precision barrel finishing equipment provides vibration-free operation.

The units have molded glass fiber safety gates which are corrosion proof and lightweight. Full-opening doors are sealed with high pressure cam locks. Safety controls prevent the machine from operating with the gate open—except for jogging.

The equipment is offered in 20 sizes ranging from 5 to 30 cu ft capacity, having one to six compartments, and designed for wet or dry processes.

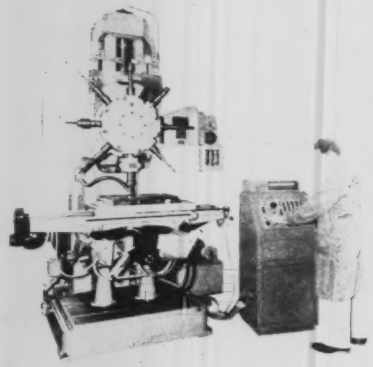
Standard cylinders are lined with $\frac{1}{4}$-in. calendered neoprene to eliminate porosity and increase lining life. Other linings include rubber and $\frac{1}{4}$-in. steel plate. *Write*: Techline Div., Wheelabrator Corp., 1157 Avenue V, Vicksburg, Mich.



NEW PRODUCTS and equipment

Machine Tape Controlled

Automatic numerical tape controls are now applied to the large Burgmaster Model 3BH-T turret



drills. These machines have eight spindles, a drilling capacity of 1½ in. diameter, and a tapping capacity of 1½ in. diameter in mild steel.

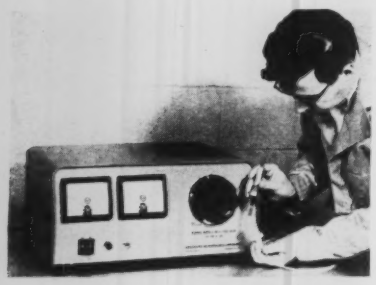
The standard table has 18 x 30 in. travel; tables up to 30 x 45 in. are available.

The controls provide four methods of operation: Manual, automatic, semiautomatic, and standard automatic-hydraulic. Tape preparation is fast (the Electrosystem may be supplied with simple hand punching of decimal numbers and spindle sequences, or Flexowriter or IBM automatic typewriter). *Write*: Burg Tool Mfg. Co. Inc., Gardena, Calif. *Phone*: Davis 9-4158

Aids Vacuum Coating

A high powered, glow discharge unit, the LC-031, is capable of delivering 400 milliamperes at 5000 volts dc. It is an aid to operators of large vacuum coaters.

The unit will bombard the surface with high velocity due to the higher



accelerating voltage. This results in a cleaner surface for coating.

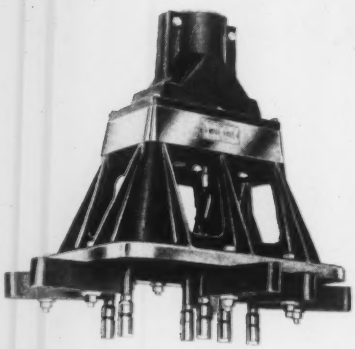
Ceramicite is used as the insulating material, allowing the electrode assembly to withstand more than 5000 volts without arcing. *Write*: Rochester Div., Consolidated Electrodynamics Corp., 1775 Mt. Read Blvd., Rochester, N. Y. *Phone*: Glenwood 7972

Unit Handles 15 Drills

Model 8-12 Multi-Drill may be equipped with up to 15 gear-driven spindles for multiple drilling and tapping over a maximum area of 25½ x 21½ in.

Universally adjustable locating arms and heavy-duty universal joints in all spindles permit any desired hole pattern adjustments within the working area.

The unit will fit any drill press.



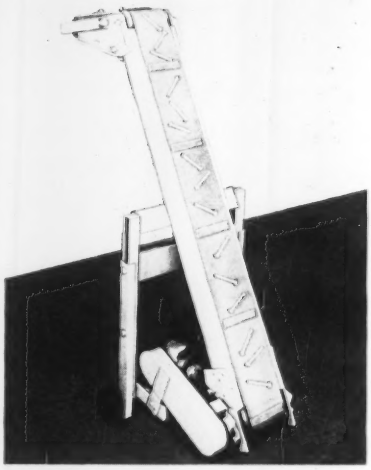
Spindles are driven by high or low speed gear sets. *Write*: Commander Mfg. Co., 4225 W. Kinzie St., Chicago, Ill. *Phone*: Sacramento 2-4544

Steep Inclines Handled

Magnebelt magnetic conveyors handle ferrous parts up steep inclines. Constructed of light aluminum alloy, they are infinitely adjustable from 60 to 90 degrees, and have gooseneck extensions to deposit parts.

This space saving conveyor is easy to roll into place. Tote buggies can be placed under the discharge end from the front or sides without interfering with the conveyor support.

Standard models are from 4 to 10 ft high in 1-ft increments. The belt is 6-in. wide neoprene and runs at 85 ft a minute. *Write*: M-H Standard Corp., 515 Communipaw Ave.,



Jersey City 4, N. J. *Phone*: Henderson 3-5834

Removes Grease and Oil

Solutions made with Magnusol X-4 will completely remove oil when sprayed, brushed, or wiped over metal surfaces. The solvent is removed with a pressure water rinse.

The solution can be used on painted surfaces, and can be placed on polished and buffed steel parts without staining or discoloring them. It can be used for tank-type cleaning. *Write*: Magnus Chemical Co. Inc., South Avenue, Garwood, N. J. *Phone*: Sunset 9-0200

Inspects without Cutting

A 14-in. optional section comparator inspects the contours of blade edges, the fairing between edge contour, and foil contour. It incorporates two high intensity illuminat-

ing units which produce collimated light.

This light is projected past the

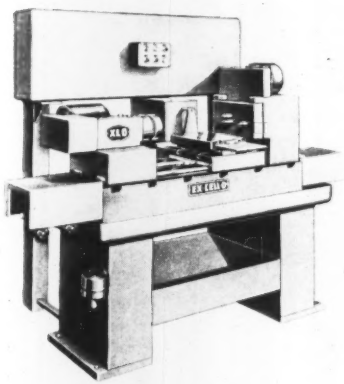
knife edge onto the blade. The straight-line shadow formed is inspected as a cross-sectional view of the blade edge contour. *Write*: Jones & Lamson Machine Co., Springfield, Vt. *Phone*: Turner 5-2121

Bores Small Parts

A small, precision boring machine, Style 712, is a potential cost cutter where economical production of small, accurate bores is a problem. It was designed primarily for instrument and missile production.

With a custommade multiboring plate, holes may be bored in one pass on a high production basis with the accuracy associated with conventional boring methods.

The table is operated pneumatically with hydraulic feed control. *Write*: Ex-Cell-O Corp., 1200 Oakman Blvd., Detroit 32, Mich. *Phone*: Townsend 8-3900

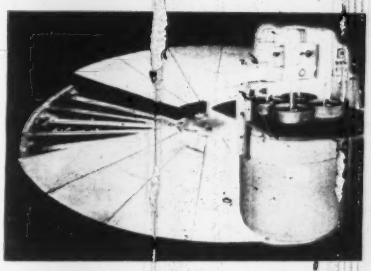


Lap Base Water Cooled

A base for flat lapping uses a flow of water in the casting base under the lap segments for cooling.

The heat buildup through rapid metal removal is alleviated and the ultimate in stock removal from hard steels, alloys, and carbides is accomplished without distortion.

Accuracies of fractional light band, and surface finish of 1 microinch can be obtained simultaneously with stock removal rates equal to grinding. Internal cooling control has been proved on stainless, 4140, high speed, and tool steels; carbides, nitralloy, and Alnico. *Write*: Abrading Systems Co., 8020 N. Monticello, Skokie, Ill. *Phone*: Orchard 6-1500



Units Control Small Lines

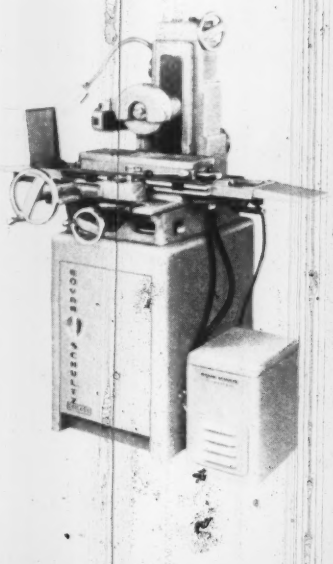
General-duty mill control panels meet moderate requirements of limited production lines in the metal fabricating and processing industries.

Basic electrical circuits, duty-rated equipment, and compact construction are combined in the panels to provide accurate, reliable control for selected applications.

They are designed for use on small tube and forming mills, slow-speed slitting and trimming lines, drawbench control, slow-speed rod and bar mills, and small, slow-speed cold mills. *Write*: General Electric Co., Schenectady 5, N. Y. *Phone*: Franklin 4-2211

Grinder Has Power Feed

A 6-18 Challenger hydraulic surface grinder is precision built with the same accuracy and sturdiness as the hand-fed 6-18 model. This machine has hydraulic longitudinal feed. *Write*: Boyer-Schultz Corp., 2000 S. 25th Ave., Broadview, Ill.



NEW literature

Write directly to the company for a copy

Material Handling

Steel mesh containers, called Palletainers, are described in an 18-page catalog. Material Handling Equipment Div., Union Steel Products Co., Albion, Mich.

Conveyors

This pocket-size folder describes a complete line of power belt and gravity conveyors. Conveyor Dept., A. B. Farquhar Div., Oliver Corp., 44 N. Duke St., York, Pa.

Odor Control

"Odor Control Research and Engineering" describes techniques in the application of odor-metering apparatus to industrial odor control problems. Hemeon Associates, 121 Meyran Ave., Pittsburgh 13, Pa.

Bandsaws

Bulletin No. 1069 describes Safe-Flex high speed, steel bandsaws, gives recommendations for use and specifications. L. S. Starrett Co., Athol, Mass.

Custom Fasteners

A brochure illustrates 123 custommade bolts, nuts, studs, and screws for industrial use. Victor Products Corp., 2635 W. Belmont Ave., Chicago 18, Ill.

Fork Truck

A brochure describes the CY-20, a 2000-lb capacity, gas powered fork truck, equipped with pneumatic tires. Industrial Truck Div., Clark Equipment Co., Battle Creek, Mich.

Roll Grinders

Bulletin No. 120, "Farrel Heavy-Duty Roll Grinders," contains recent design innovations and general specifications for the six sizes available. Farrel-Birmingham Co. Inc., Ansonia, Conn.

Box Dump Attachment

A catalog sheet describes a box dump attachment for fork trucks with capacities from 2000 to 10,000 lb. The device provides ease, speed, and safety in dumping drop-bottom boxes. Elwell-Parker Electric Co., 4205 St. Clair Ave., Cleveland 3, Ohio.

Fire Bricks

A revised 8-page brochure, IN-115A, describes how insulating fire bricks and Sil-O-Cel insulating bricks can be used for economical control of heat through 3000° F. Johns-Manville Corp., 22 E. 40th St., New York 16, N. Y.

Rubberized Abrasives

A catalog explains the uses of rubberized abrasive wheels, points, blocks, sticks, and cones. Also covered are operating instructions and application information. Cratex Mfg. Co., 1600 Rollins Rd., Burlingame, Calif.

Man's Eternal Struggle with the Machine

AS PROFITS SHRINK AND COSTS CONTINUE TO GO UP, MORE THAN JUST "THE VENDOR'S QUOTATION" IS NEEDED!

Certainly you have to depend on your vendors . . . but how much?

The answer is "completely"! Your job is tough enough without your having to be a machine design or materials handling expert, too.

When you're specifying equipment, you should *only* have to provide an objective explanation of the problem, as well as the understanding of the product and related processes.

The vendor is the expert who's supposed to analyze that problem, then design and supply the necessary equipment. And the equipment should be ready to do your job when it's installed, too. Your overhead can't afford the lost production time and expense while you test and prove the vendor's equipment for him. After all, your original specifications called for equipment *to do a particular job.*

Sciaky has always accepted the vendor's full responsibility for design, manufacture and *delivery into production* according to the original specifications. That's why Sciaky resistance welding and production equipment satisfies the requirements of *your* particular job. That's why Sciaky operates the only independent, fully staffed and equipped Research Center devoted to advancing the application of resistance welding processes.

Why take less than the full advantage of consulting with a Sciaky Application Engineer the next time you are considering equipment. No obligation, of course.

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Market Outlook

Stage Set for September Rally

PRODUCTION will hit a 1958 high this month unless a big auto strike comes by midmonth.

Operations are at the highest level since June 22, and prospects for continued improvement are good. Producers predict that their September shipments can top last month's by at least 20 per cent.

Steelmaking scored its eighth consecutive gain last week, with furnaces operating at 63.5 per cent of capacity. Production was about 1,715,000 net tons of steel for ingots and castings. Aided by a strong finish, August's output was the best of the year to date: About 7.3 million tons. Only 7.13 million tons were produced in June, when many consumers were buying for price protection.

INVENTORIES ADJUSTED?— If the industry's market research men are right, consumers have completed their inventory adjustments. Liquidation began in April or May of 1957, when users had about 24 million tons of steel. By January, 1958, stocks had been trimmed to about 19 million tons. Researchers have been saying all year that inventories would reach the "minimum" level (12 million tons) by Labor Day. There's little likelihood of an immediate switch from reduction to accumulation, but one expert thinks users will have to add 300,000 tons to their stocks this month if they're to maintain a 60-day inventory.

GAINS ACROSS THE BOARD— Depleted stocks are forcing many consumers back into the market even though their sales haven't improved. Manufacturers of household appliances and office furniture are among the few users who can report substantial gains in retail business. Construction demand continues strong, and tin plate producers are working close to capacity to meet canmakers' requirements.

DELIVERIES EXTENDED— Steelmakers say their backlogs are larger than they've been at any previous time this year. A Chicago mill has 20 per cent more business on its books than it had three months ago, 10 per cent more than it had one month ago. By the third week in August, it was booked solid on September production of galvanized and cold-rolled sheets. An eastern producer is promising delivery of hot-rolled sheets in three to five weeks; cold-rolled in five or six weeks.

STRIKE THREAT PERSISTS— Automotive releases continue to reflect labor uncertainties and conservative production plans. Chances for an amicable settlement are rapidly diminishing as the Big Three maintain a solid front. (If a walkout occurs, odds are it won't come much before October.) Wildcat strikes are indicative of mounting tension, but they haven't hurt steel sales yet. At Cleveland, autoworkers struck three Ford Motor Co. plants to protest the firing of a union committeeman. Commenting on the walkouts, a steelmaker declared: "We've had no order cancellations or deferments on account of this strike or any others. Bookings are improving, and shipments to auto plants should be higher in September."

DISCOUNTS REVAMPED— Stainless steel producers have followed U. S. Steel Corp.'s lead in slashing prices on plates, but some are undecided about eliminating distributors' discounts. Allegheny Ludlum Steel Corp.'s decision will be relatively uncomplicated. The company has only one distributor: Joseph T. Ryerson & Son Inc.

On Aug. 1, U. S. Steel's National Tube Div. cut the jobber's discount on direct shipments of pipe from 5 per cent to 3 per cent. Other producers followed suit. Jobbers are up in arms. The larger distributors are less vocal than the small ones, probably because they had no interest in carload shipments.

WHERE TO FIND MARKETS & PRICES

	News	Prices		News	Prices
Bars, Merchant	87	95	Nonferrous Met.	108	110
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Ingot Rates	92	...	Tool Steel	...	99
Metal Powder	...	101	Tubular Goods	87	99
Ores	91	101	Wire	91	97

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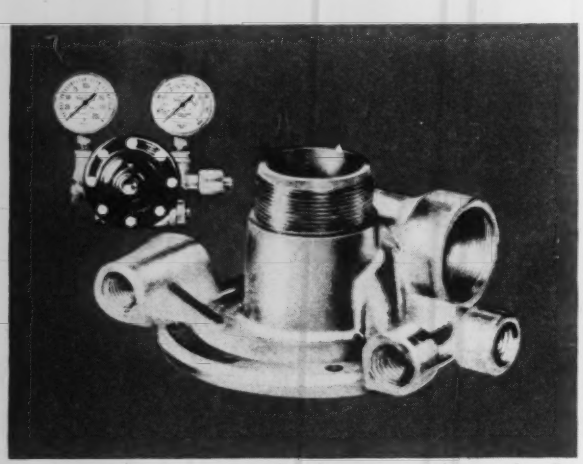

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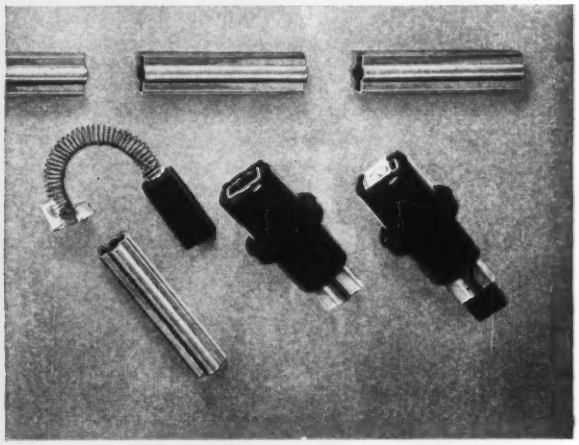
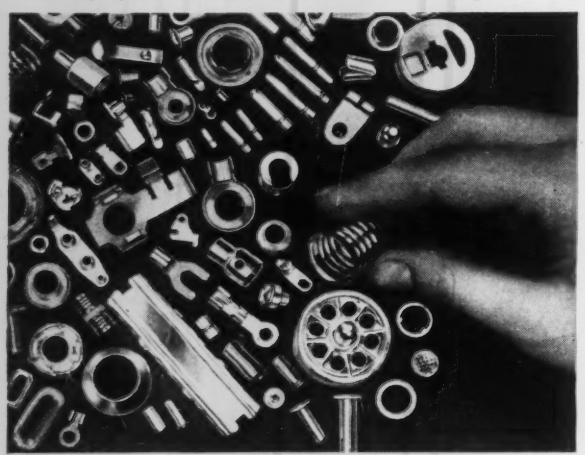


SPECIAL-SHAPE TUBES can, as in the case of Electrolux, save several steps in arriving at a finished part. Brass electric-motor brush holder (above) is cut economically from long lengths of tube pre-shaped to accommodate both brush and spring. Uniform accuracy of all dimensions helps provide good brush stability.



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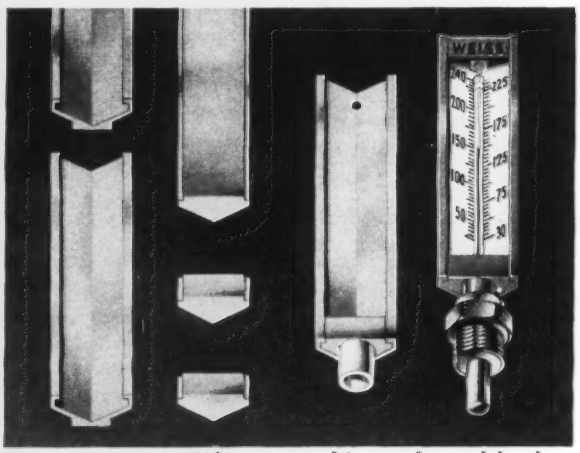

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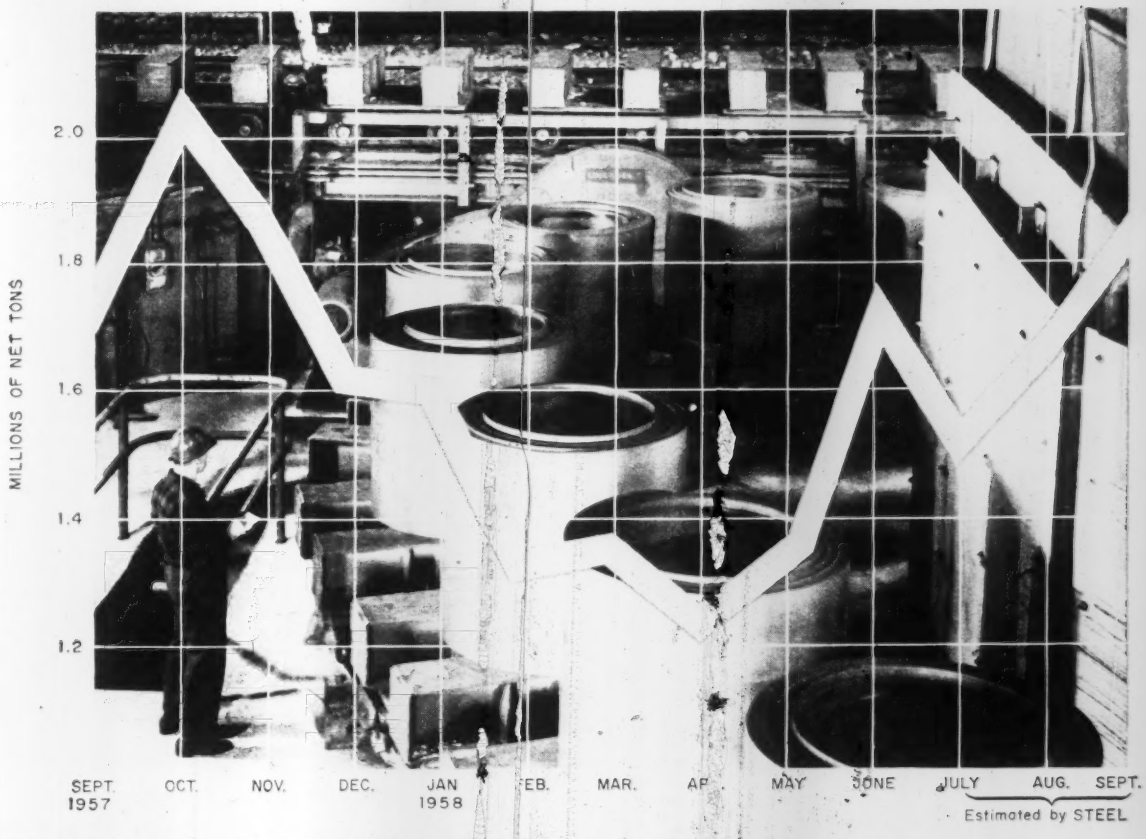

AISI statistics on carbon, stainless, and alloy sheets. Photo credit: Jones & Laughlin Steel Corp.

Sheets Begin Comeback

Several consumer goods industries have increased their buying. September shipments should establish a one-month high for year if there's no work stoppage in auto plants

"THERE'S NO DOUBT that an upswing in demand for sheets is starting," producers told STEEL last week. Their only reservation: What looks like a fourth quarter sales boom in the making could be turned into a dud by an auto strike in late September or early October.

Despite the definite possibility of a strike in an industry which consumed 6.2 million tons of cold-rolled sheets in 1957 (out of total production of 11.9 million tons), a midwestern sheet sales manager says: "We're more optimistic now than we have been all year. Sales turned up in June, but some of that gain was attributed to hedging against a price increase. There's no inventory building now. All buying represents actual needs."

Upturn in Sales Begins—Shipments dipped in July but recovered quickly in August. A Pittsburgh producer reports: "Deliveries were up 10 to 15 per cent in August, and they should increase 15 per cent in September." A more optimistic producer looks for a 25 to 30 per cent gain this month. An increase of only 10 per cent per month in August and September would bring sheet shipments in September to the highest single month's total of the year (see chart, above).

Sales managers look for a slow gradual buildup in sales through the final three months, unless auto plants are closed. If there's a lengthy work stoppage, orders in the fourth quarter will trickle to mills on a spot basis from a widely scattered group of consumers who will expect and get quick delivery. To reach sales goals in a short production year, automakers would have to step up purchasing quickly in the first quarter, 1959 (their inventories are extremely low now). That would probably result in a tight sheet market through the first half of next year.

Here's how sheet producers' major customers stand now:

Automakers — "We're getting some releases on sheet orders for production of '59s, but ordering is slow and cautious," says an Ohio supplier. Sellers have few orders specifying shipment later than early October.

"The strike threat in Detroit is definitely affecting order placements," another seller adds. "If automakers are going to increase their sales this year, as they expect,

they'll have to build up their sheet buying between now and early 1959. They don't want to step up orders now, because a sudden strike might catch them with an oversupply. On the other hand, there are no cancellations and few postponements of orders once they have been placed. Auto producers are carrying a 20 to 30 day inventory of sheets. That's adequate for initial new model production."

Shipments in August to auto plants were low, although they exceeded those of July. September's buying will be slightly larger. If labor troubles end by October, the fourth quarter should be the best of the year in automotive buying.

Automotive Suppliers—A Pittsburgh producer notes a gradual improvement in orders from independent fabricators to the auto industry. Stampers are taking more sheets. Cleveland distributors say the strike threat hasn't halted an upturn in buying by subcontractors.

Appliance Producers — Retail sales of household goods increased in June, but several months passed before major producers reduced their inventories of unsold appliances. "Producers have generally completed their inventory correction. Their buying was up in August and it should gain again this month. They'll have to buy as much as they use in the fourth quarter," one sheet supplier reports.

Office Furniture — "Demand is better than it has been for most of this year. It's increasing at a gradual rate," says an eastern sheetmaker.

Construction—Sales of galvanized sheets are close to year-ago figures, as applications in furnaces, gutters, air-conditioning equipment, and farm buildings take large tonnages. The construction industry's demand for cold and hot rolled sheets is strong, too.

Service Centers — Distributors have low requirements. Their sales are slow, although several report modest gains. They don't anticipate a major pickup in their buying until automotive work increases.

These scattered improvements in sales result in a tightening sheet supply. An Illinois mill says cold-rolled sheets and strip aren't available in less than five weeks. Quicker deliveries were possible in July. Most Pittsburgh mills offer three to five week delivery on cold-rolled sheets. Many mills continue to receive and to fill orders specifying rush delivery, but they report a greater proportion of their customers are planning their buying farther in advance of expected shipment date.

Distributors . . .

Prices, Page 100

Demand remains low for most products at steel service centers. With extremely competitive conditions prevailing, there's some pressure on distributors to absorb part of the recently instituted mill price increases.

In the Houston area, it takes the form of more inquiries by customers before placing an order and a reduction in the order rate. A warehouse manager terms it a "rebellion." Despite the objections to higher prices, distributors in Hous-

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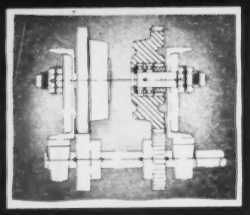

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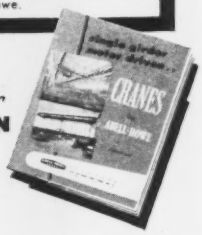

ABELL-HOWE COMPANY *7757 W. Van Buren St., Forest Park, Illinois*

ton are holding firm on the new quotations.

Distributors in other areas report no changes in the rate of incoming orders. Most expect improvements in sales this month, basing their expectations on predictions of a general improvement in metalworking activity.

Refractories . . .

Refractories Prices, Page 101

Blaw-Knox Co., Pittsburgh, has broadened its services to users of refractories by the addition of a line of refractory bricks, plastic cements, and castable refractory products. The firm has negotiated distributor agreements with these producers: Wellsville Fire Brick Co., Wellsville, Mo.; Cambria Fire Brick Co., Davis Fire Brick Co., Ohio Fire Brick Co., and Sivad Ceramics Corp., all of Oak Hill, Ohio. Blaw-Knox will handle the line through a newly created Refractories & Special Products Dept., managed by William C. Berg Jr., assistant to the vice president of sales.

Steel Bars . . .

Bar Prices, Page 95

Improvement in bar orders is reported by eastern producers. Gains are slow but steady. Defense needs are up slightly. In the New York area, improvement in demand is centered on large, hot-rolled carbon rounds and flats. Smaller sizes of hot-rolled bars and all sizes of cold-finished bars show no improvement.

A Philadelphia-area mill reports orders are slow, but demand should increase this month due to increased orders from the automotive industry and from manufacturers of agricultural equipment.

Pittsburgh barmakers don't expect full order books until automakers, warehouses, and railroad equipment manufacturers are more active. Automotive releases reflect labor uncertainties and conservative production schedules. Says one producer: "Our July orders utilized only one-third of our capacity. August was 30 per cent better. September could see a continuation of that improvement, but orders are coming in too slowly to give an indication of this month's trend yet."

Consumers are operating with small inventories. They're able to obtain all the bars they require in two to three weeks. Numerous cold-finished sizes and grades are available from stock.

General Stores Supply Office, Navy, Philadelphia, closes bids Sept. 3 on 405 tons of bars for distribution to various shipyards.

Container Prices To Rise

Inland Steel Container Co., a division of Inland Steel Co., Chicago, will raise its price on steel drums and pails Sept. 15. Estimated increase: About 4 per cent.

Tubular Goods . . .

Tubular Goods Prices, Page 99

Tube producers are looking forward to more business in September. Reason: Texas has raised its oil production quota from 11 producing days a month to 12.

Suppliers to the auto industry may also help the tube producers. Reason: They have not ordered for fall production. They're waiting until they are sure automakers' specifications won't change. Once they get their releases, they'll order enough steel to take care of their

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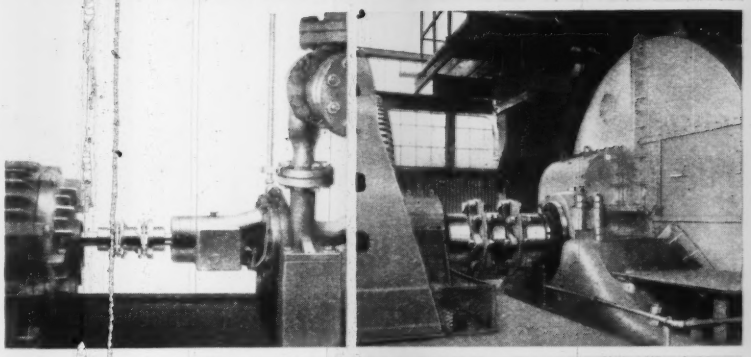

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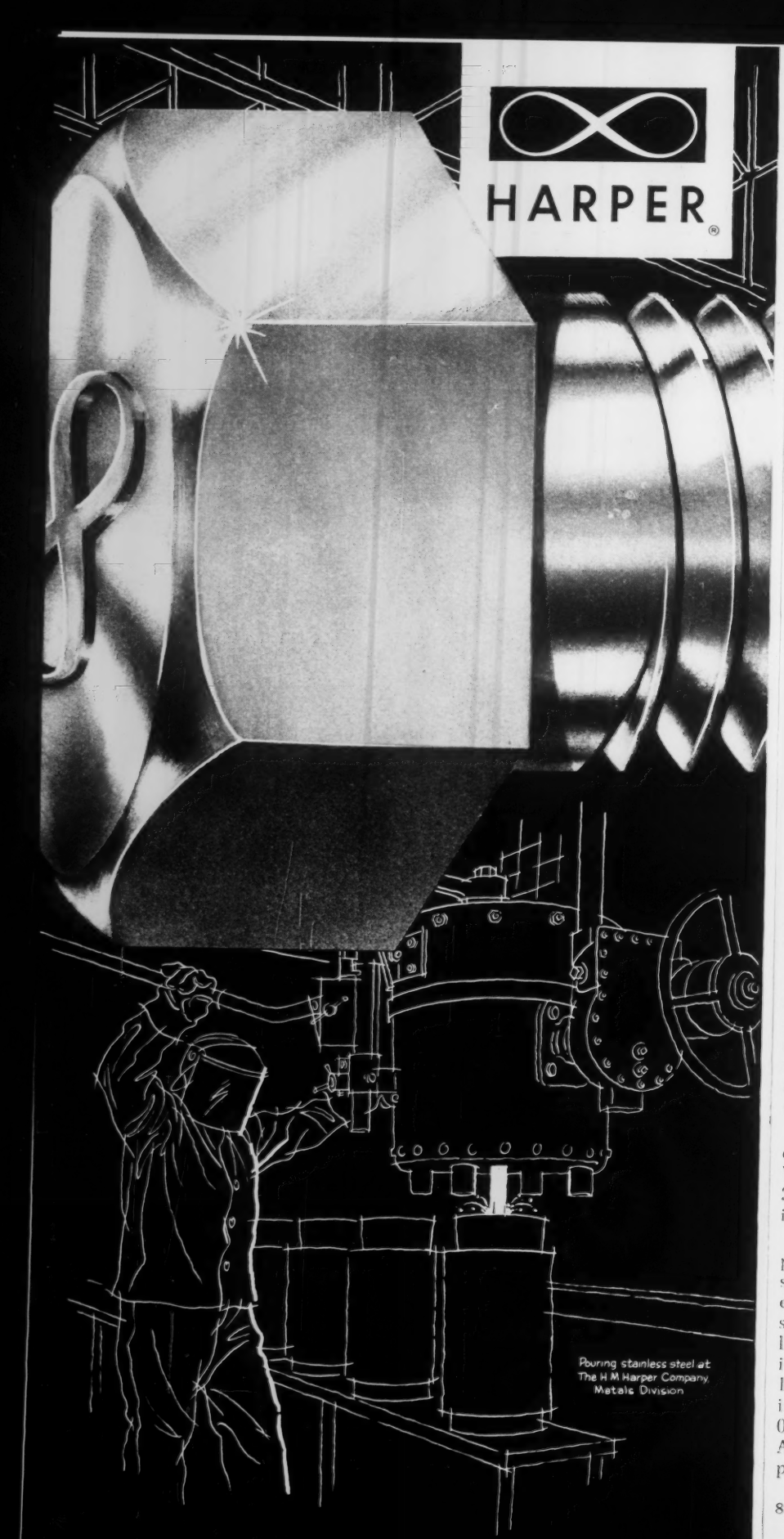

needs for five or six months.

In early August, oil producers took every bit of tubing they could to beat the higher prices. "Now they're cooling off," says one tubemaker. "Our August shipments probably won't match July's. We should do better in September due to the upping of the quota."

July turned out to be a better month for standard tube producers than they had expected. Buyers rushed to buy their fall production needs before the price hike. August shipments were as good. Bethlehem Steel Co., Bethlehem, Pa., has announced a new continuous buttweld steel structural pipe which is 20 per cent lighter than standard pipe but has the same bending quality.

Mine Roof Bolt Price Up

Youngstown Sheet & Tube Co., Youngstown, announces a 6 per cent increase in the price of mine roof bolts and accessories. Effective date: Aug. 25.

Leads in Electric Steel

A study by the Lectromelt Furnace Div., McGraw-Edison Co., Pittsburgh, shows the West Coast leads the nation as a producer of electric steel ingots by three times the national average. In the last ten years, the area has boosted its ingot capacity 55.8 per cent to 7,898,700 tons. As recently as two years ago, 22 per cent of the ingot steel produced in the area was tapped from electric furnaces. That compares with a national production rate of slightly over 7 per cent.

Eleven years ago, total ingot production for California, Oregon, and Washington amounted to only 2,285,000 tons; electric furnace capacity represented 371,000 tons.

The area's share of electric steel production is scheduled to increase sharply. Two 100-ton capacity electric arc furnaces recently installed in the Seattle plant of Bethlehem Pacific Coast Steel Corp. will increase production by more than 10 per cent. Bethlehem's steelmaking capacity is being boosted to 410,000 tons annually. End result: About one-third of west coast ingot production will be electric steel.

Plates . . .

Plate Prices, Page 95

A continued lag in heavy industrial machinery and railroad equipment production is felt by plate suppliers. They report a leveling off in building construction and tankwork in the New York area. Those losses are balanced by improved shipwork.

Pittsburgh plate suppliers have enough business in sight to permit publication of rolling schedules for the first time this year. After seven months of inventory liquidation, a major manufacturer of electrical apparatus has returned to the market for plates. "We've ordered plates for October delivery, and we'll take as much steel in November as we used in August," says a buyer.

In other areas, plate demand continues light. Fabricators in Los Angeles report little need for steel. In Philadelphia, consumers can obtain sheared carbon plates in two to three weeks.

New England sellers say tank shop demand has slackened, and buyers have relatively high inventories of plates.

Pig Iron . . .

Pig Iron Prices, Page 100

Most merchant pig iron suppliers predict a growth in shipments by early fourth quarter, but they think gains will be moderate this month. In Buffalo, for example, mills are expected to hike their output of iron, and merchant ironmakers will step up production slowly to meet expected gains in foundry demand.

Melting activity in Los Angeles was up slightly last month, with most plants operating at about 70 per cent of capacity. A Philadelphia pig iron seller expects a "substantial" improvement within the next month or two.

July Iron Output Dips

Blast furnace production (pig iron, ferromanganese, and spiegeleisen) declined in July—4,304,183 tons, compared with 4,422,748 tons in June—reports the American Iron & Steel Institute, New York. Of the totals, ferroalloys accounted for 26,668 tons in July and 26,463 tons in June.

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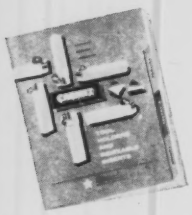

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of this year came to 30,009,189 tons, including 278,991 tons of ferroalloys (56.8 per cent of capacity). In the like period a year ago, output came to 48,350,783 tons, including 461,225 tons of ferroalloys (95.9 per cent of capacity).

BLAST FURNACE PRODUCTION
(Pig iron, Ferromanganese, Spiegeleisen, Net tons)

By State:	July, 1958	First 7 Months
Massachusetts, New York	208,721	1,880,524
Pennsylvania	1,078,270	7,989,909
Maryland, Virginia, W. Virginia	512,851	3,431,338
Kentucky, Tennessee, Texas	129,184	864,026
Alabama	249,694	1,915,987
Ohio	699,351	4,662,074
Indiana	598,895	3,989,595
Illinois	299,803	1,978,410
Michigan, Minnesota	269,319	1,448,252
Colorado, Utah, California	258,065	1,849,074
Totals	4,304,183	30,009,189
Ferromanganese & spiegeleisen included above	26,668	278,991

Data from the American Iron & Steel Institute

Iron Ore . . .

Iron Ore Prices, Page 101

U. S. iron ore mines produced 2,997,000 long tons of ore and shipped 1,534,000 tons in April, says the Bureau of Mines, Interior Department, Washington. Production was 54 per cent less than in April, 1957.

Imports of iron ore came from 11 countries in April and totaled 1,735,351 tons. Venezuela continued as the leading supplier with 61 per cent of the total, followed by Chile, 18 per cent; Peru, 9 per cent; Liberia, 6 per cent; and Brazil, 3 per cent. Mexico, Canada, Panama, British West Africa, Philippines, and United Kingdom supplied the remaining 3 per cent.

Lack of demand in the U. S. was the chief factor in a 40 per cent drop in shipments of iron ore from Canadian mines in the first six months of the year.

Rails, Cars . . .

Track Material Prices, Page 98

Pullman-Standard Car Mfg. Co.'s freight car manufacturing plant at Bessemer, Ala., will close this month. The last cars on order at the plant are scheduled to be delivered Sept. 16. J. W. Miller, assistant vice president in charge of sales at Birmingham, says it is uncertain how long the plant will remain closed. The company is getting some inquiries from the railroads regarding freight cars, but so far no new orders have been placed.

Completion of a $1-million spare parts manufacturing facility at the Bessemer plant is expected in the next two or three months, but no definite time has been set for it to begin operations.

Inland Steel Co. will terminate production of rails, joint bars and tie plates Sept. 13. The closing was decided upon a long time ago because demand for these products is no longer sufficient to warrant continued production, the company said.

Domestic freight car buying still lags badly. July orders, according to the American Railway Car Institute and the Association of American Railroads, involved 376 cars, compared with 317 the month before and 7251 in July, 1957.

Deliveries in July totaled 2113 cars, against 2407 in June and 7725 in July last year. Cars on order as of Aug. 1 totaled 25,994, compared with 27,757 on July 1 and 85,229 a year ago.

Wire . . .

Wire Prices, Pages 97 & 98

Manufacturers of spring wire and other metal components for furniture stand to profit by a "Buy Better Furniture Values Now" campaign, announced last week in Chicago at the annual Supply, Equipment & Fabric Fair sponsored by the National Association of Furniture Manufacturers.

Hopes are that the campaign will equal or surpass the automobile industry's "You Auto Buy Now" drive of last spring.

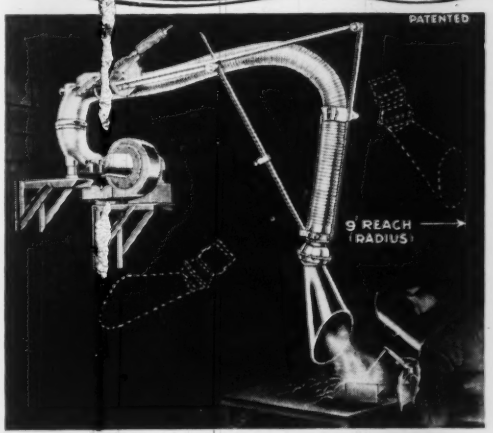
Structural Shapes . . .

Structural Shape Prices, Page 95

Structural fabricators are active, but new business continues to drop off, cutting backlogs. Competition remains keen, with most inquiries coming from bridgework. Industrial and commercial construction is spotty.

Fabricated material prices are reflecting little, if any, of the recent increases in plain material. Some shops in Boston, which are including higher plain material costs in

"It certainly is a relief to have fumes and heat removed while I'm welding. The Ruemelin Collector has great suction. It makes a day's work pleasanter!"



Ruemelin Fume Collector in operation.

Welding shops equipped with Ruemelin Fume Collectors are assured of a clean shop atmosphere. Noxious fumes, heat and smoke are eliminated at their source, thus improving working conditions, lessening fatigue and paving the way for increased plant production.

The Ruemelin Fume Collector hood can be instantly placed where needed anywhere in the booth welding area. No tedious adjustments necessary. Just pull the inlet hood to the welding position and you are ready to go.

Note the new spring-loaded counterbalance mechanism which makes Fume Collector much easier to handle. Ask for Bulletin 37-E illustrating this new feature.

RUEMELIN MFG. CO.
MANUFACTURERS AND ENGINEERS
SAND BLAST AND DUST COLLECTING EQUIPMENT
3882 NORTH PALMER STREET • MILWAUKEE 12, WISCONSIN, U. S. A.

A 5718-5R

their estimates, are out of the running competitively.

Structural shapes are being delivered in three to four weeks in most areas. Fabricators are buying close to contract requirements.

R. C. Mahon Co., Detroit, has been awarded contracts from Ohio contractors totaling $3,349,000 to engineer and fabricate 33 structural steel bridges for Ohio's North-South Turnpike. Mahon has started fabrication operations. More than 8000 tons of structural steel will be involved.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

2800 tons, state bridge work, Erie County, New York, through Johnson, Drake & Piper, to Ernst Steel & Construction Corp., Buffalo.

1675 tons, six grade separations, three bridges, Hockanum River and box culvert, East Hartford (Conn.) Expressway, to McDermott Steel Specialties Co., Hartford; White Oak Excavators Inc., Plainville, Conn., general contractor.

1250 tons, powerplant, Arkansas Power & Light Co., through Ebasco Services Inc., New York, to Mississippi Valley Structural Steel Co., St. Louis.

615 tons, four state highway bridges, pedestrian span and underpass, Waterbury, Conn., to City Iron Works, Wethersfield, Conn.; D. Arrigoni Construction Co., Middletown, Conn., general contractor.

610 tons, state highway bridges, Holyoke-South Hadley, Mass., to Mount Vernon Bridge Co., Mt. Vernon, Ohio; Golden & O'Brien Co., Chicopee, Mass., general contractor.

300 tons, distribution center, Weis Markets Inc., Sunbury, Pa., to Anthracite Bridge Co., Scranton, Pa.

115 tons, 2-span WF beam bridge, Bennington, Vt., to A. Leo Nash Steel Corp., Pittsfield, Mass.; W. H. Morse Construction Co., Bennington, general contractor.

STRUCTURAL STEEL PENDING

4200 tons, subway construction at Christie Street, Manhattan, for the New York City Transit Authority; Arthur A. Johnson, that city, low on the general contract.

2530 tons, embedded structural towers, guides, and sills, Lewiston powerplant, Niagara Falls, N. Y.; bids Sept. 11, Power Authority, State of New York, New York.

500 tons, Suburban Osteopathic Hospital, Chester County, Pennsylvania; bids to be closed soon.

475 tons, Port Reading grade crossing elimination over Central Railroad of New Jersey, Woodbridge, N. J.; bids Sept. 12, Trenton; also 170 tons, concrete reinforcing bars and 7460 ft (linear) steel bearing piles.

300 tons, science building, Kings College, Wilkes-Barre, Pa.; bids closed.

REINFORCING BARS . . .

REINFORCING BARS PLACED

5000 tons, James Monroe and Rosedale housing developments, Bronx, New York, to Fabricators Steel & Mfg. Corp., that city.

1100 tons, state highway structures, including underpass, Brattleboro Vt., to Scherer Steel Co., East Hartford, Conn.; Lane Construction Co., Meriden, Conn., general contractor.

570 tons, dormitories and dining center, Brandeis University, Waltham, Mass., to Bethlehem Steel Co., Bethlehem, Pa.; Perini Corp., Framingham, Mass., general contractor.

330 tons, two dormitories, Tufts University, Medford, Mass., to Northern Steel Inc., Boston; George B. H. Macomber Co., Boston, general contractor.

300 tons, four state bridges, pedestrian span and underpass, Waterbury, Conn., to Joseph T. Ryerson & Son Inc., Boston; D. Arrigoni Construction Co., Middletown, Conn., general contractor; 175 tons steel piles and 185 tons, highway mat reinforcement, to Bethlehem Steel Co., Bethlehem, Pa.

REINFORCING BARS PENDING

114 tons, state bridgework, Lawrence County, Pennsylvania; bids Sept. 12.

PLATES . . .

PLATES PLACED

1100 tons, storage tank, Tidewater Oil Co., Delaware City, Del., to Graver Tank & Mfg. Co., East Chicago, Ill.

RAILS, CARS . . .

RAILROAD CARS PLACED

Trailer Train Co. (jointly owned by nine major railroads and the Rail Trailer Co.), 85-ft flat cars; 200 to American Car & Foundry Div., ACF Industries Inc., New York, and 200 to Pullman-Standard Car Mfg. Co., Chicago.

RAILROAD CARS PENDING

New York City Transit Authority, 114 subway passenger cars for the IRT Div.; bids Sept. 19.

Union Railroad, 100 to 150 heavy slab cars; bids closed.

July Steel Output Dips

Steel production declined to 6,420,405 tons in July, vs. 7,127,480 tons in June and 8,908,732 tons in July, 1957, reports the American Iron & Steel Institute, New York. The July total included: 5,994,318 tons of carbon steel; 363,800 tons of alloy steel, other than stainless; and 62,287 tons of stainless and heat resisting steel.

Output in the first seven months of this year came to 44,172,892 tons (54 per cent of capacity), compared with 69,492,279 tons (89.6 per cent) in the like period a year ago. Of this year's total, 40,863,367 tons were carbon, 2,870,024 tons alloy, and 439,501 tons stainless and heat resisting steel.

STEEL INGOT PRODUCTION
(Carbon and alloy)

By State:	July, 1958	First 7 Months 1958
Massachusetts, Rhode Island, Connecticut	13,153	114,026
New York	275,776	2,016,669
Pennsylvania	1,542,525	11,224,256
New Jersey, Delaware, Maryland	464,563	3,462,515
Virginia, W. Virginia, Kentucky, Tennessee	341,161	2,058,417
Georgia, Alabama, Mississippi	294,521	2,009,423
Ohio	972,394	6,706,574
Indiana	991,524	6,466,796
Illinois	508,854	3,510,467
Michigan, Minnesota	393,354	2,251,412
Missouri, Oklahoma, Texas, Colorado	310,539	1,850,442
Utah, Washington, Oregon	140,839	1,113,160
California	171,202	1,388,735
Totals	6,420,405	44,172,892

Data from the American Iron & Steel Institute.

DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

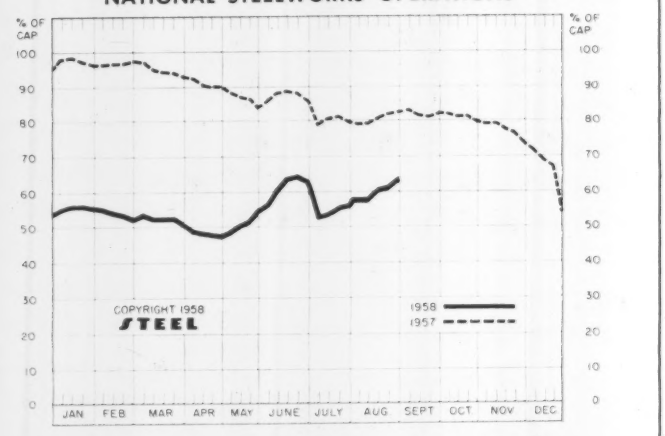
	Week Ended Aug. 31	Change	Same Week 1957	Same Week 1956
Pittsburgh	56	+ 3*	81	97.5
Chicago	74	0*	84.5	97
Eastern	61	0	87.5	96
Youngstown	48	- 1	79	95
Wheeling	80	0	92	97.5
Cleveland	53.5	0*	85	103.5
Buffalo	51.5	+ 4.5	95	105
Birmingham	53.5	- 1.5	85.5	93.5
Cincinnati	77.5	+ 2*	84	68.5
St. Louis	82	+ 5	76.5	89
Detroit	71.5	+ 2.5*	89	92.5
Western	69.5	- 1.5	98	94
National Rate	63.5	+ 2.5	82.5	97

INGOT PRODUCTION‡

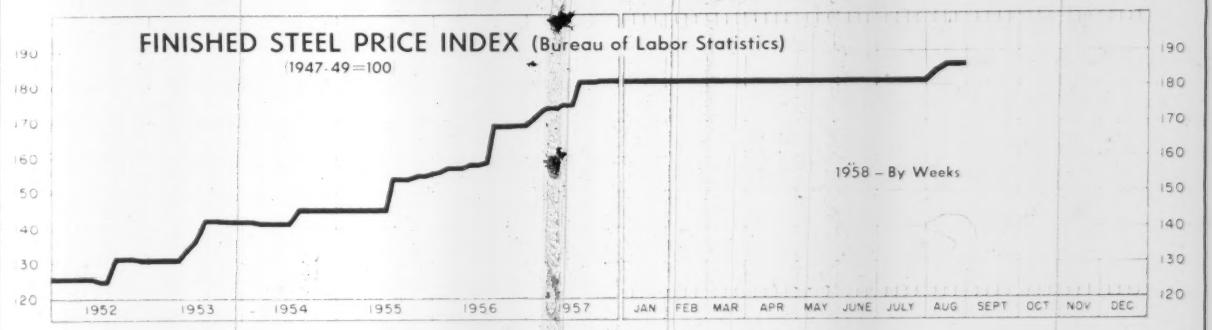
	Week Ended Aug. 31	Week Ago	Month Ago	Year Ago
INDEX (1947-49=100)	106.9†	105.2	97.2	130.9
NET TONS (In thousands)	1,717†	1,690	1,561	2,103

*Change from preceding week's revised rate. †Estimated. ‡American Iron & Steel Institute. Weekly capacity (net tons): 2,699,173 in 1958; 2,559,490 in 1957; 2,461,893 in 1956.

NATIONAL STEELWORKS OPERATIONS



Price Indexes and Composites



Aug. 26, 1958	Week Ago	Month Ago	July Avg	Year Ago
186.4	186.4*	181.5	181.5	181.5

*Revised.

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Aug. 26

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	$5.600	Bars, Reinforcing	6.335
Rails, Light, 40 lb	7.067	Bars, C.F., Carbon	10.10
Tie Plates	6.600	Bars, C.F., Alloy	14.25
Axles, Railway	10.175	Bars, C.F., Stainless, 302 (lb)	.553
Wheels, Freight Car, 33 in. (per wheel)	60.000	Sheets, H.R., Carbon	6.350
Plates, Carbon	6.350	Sheets, C.R., Carbon	7.300
Structural Shapes	6.167	Sheets, Galvanized	8.145
Bars, Tool Steel, Carbon (lb)	0.560	Sheets, C.R., Stainless, 302 (lb)	.388
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.680	Sheets, Electrical	12.425
Bars, Tool Steel, H.R., Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.060 (lb)	1.400	Strip, C.R., Carbon	8.189
Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.895	Strip, C.R., Stainless, 430 (lb)	.193
Bars, H.R., Alloy	10.775	Strip, H.R., Carbon	6.250
Bars, H.R., Stainless, 303 (lb)	0.525	Pipe, Black, Buttweld (100 ft)	20.525
Bars, H.R., Carbon	6.675	Pipe, Galv., Buttweld (100 ft)	23.975
		Pipe, Line (100 ft)	20.710
		Casing, Oil Well, Carbon (100 ft)	20.080
		Casing, Oil Well, Alloy (100 ft)	31.213
		Tubes, Boiler (100 ft)	51.200
		Tubing, Mechanical, Carbon (100 ft)	26.157
		Tubing, Mechanical, Stainless, 304 (100 ft)	205.608
		Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	9.783
		Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.483
		Black Plate, Canmaking Quality (95 lb base box)	7.583
		Wire, Drawn, Carbon	10.575
		Wire, Drawn, Stainless, 430 (lb)	0.653
		Bale Ties (bundles)	7.967
		Nails, Wire, 8d Common	9.828
		Wire, Barbed (80-rod spool)	8.719
		Woven Wire Fence (20-rod roll)	21.737

STEEL's FINISHED STEEL PRICE INDEX*

	Aug. 27 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)	246.65	246.65	239.15	239.15	189.38
Index in cents per lb	6.682	6.682	6.479	6.479	5.130

STEEL's ARITHMETICAL PRICE COMPOSITES*

Finished Steel, NT	$149.28	$149.28	$145.42	$146.19	$115.56
No. 2 Fdry Pig Iron, GT	66.49	66.49	66.49	66.49	56.54
Basic Pig Iron, GT	65.99	65.99	65.99	65.99	56.04
Malleable Pig Iron, GT	67.27	67.27	67.27	67.27	57.27
Steelmaking Scrap, GT	41.67	41.33	40.33	52.17	42.17

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL

	Aug. 27 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.675	5.675	5.425	5.425	4.15
Bars, H.R., Chicago	5.675	5.675	5.425	5.425	4.15
Bars, H.R., deld. Philadelphia	5.975	5.975	5.725	5.725	4.302
Bars, C.F., Pittsburgh	7.65*	7.65*	7.30*	7.30*	5.20
Shapes, Std., Pittsburgh	5.50	5.50	5.275	5.275	4.10
Shapes, Std., Chicago	5.50	5.50	5.275	5.275	4.10
Shapes, deld., Philadelphia	5.77	5.77	5.545	5.545	4.38
Plates, Pittsburgh	5.30	5.30	5.10	5.10	4.10
Plates, Chicago	5.30	5.30	5.10	5.10	4.10
Plates, Coatesville, Pa.	5.30	5.30	5.10	5.50	4.35
Plates, Sparrows Point, Md.	5.30	5.30	5.10	5.10	4.10
Plates, Claymont, Del.	5.30	5.30	5.10	5.70	4.55
Sheets, H.R., Pittsburgh	5.10	5.10	4.925	4.925	3.925
Sheets, H.R., Chicago	5.10	5.10	4.925	4.925	3.925
Sheets, C.R., Pittsburgh	6.275	6.275	6.05	6.05	4.775
Sheets, C.R., Chicago	6.275	6.275	6.05	6.05	4.775
Sheets, C.R., Detroit	6.275	6.275	6.05	6.05-6.15	4.975
Sheets, Galv., Pittsburgh	6.875	6.875	6.60	6.60	5.275
Strip, H.R., Pittsburgh	5.10	5.10	4.925	4.925 3.975	3.425
Strip, H.R., Chicago	5.10	5.10	4.925	4.925	3.925
Strip, C.R., Pittsburgh	7.425	7.425	7.15	7.15 5.4	5.95
Strip, C.R., Chicago	7.425	7.425	7.15	7.15	5.70
Strip, C.R., Detroit	7.425	7.425	7.15	7.25 5.4	6.05
Wire, Basic, Pittsburgh	8.00	8.00	7.65	7.65 5.475	5.525
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.95 6.5	6.55
Tin plate (1.50 lb) box, Pitts.	$10.30	$10.30	$10.30	$10.30	$8.95

*Including 0.35c for special quality.

SEMIFINISHED STEEL

Billets, forging, Pitts. (NT)	$99.50	$99.50	$96.00	$96.00	75.50
Wire rods 7/32-5/8" Pitts.	6.40	6.40	6.15	6.15	4.525

PIG IRON, Gross Ton

	Aug. 27 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pitts.	$67.00	$67.00	$67.00	$67.00	$57.00
Basic, Valley	66.00	66.00	66.00	66.00	56.00
Basic, deld., Phila.	70.41	70.41	70.41	70.01	60.75
No. 2 Fdry, NevilleIsland, Pa.	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, Chicago	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, deld., Phila.	70.91	70.91	70.91	70.51	61.25
No. 2 Fdry (Birm.) deld. Cin	62.50	62.50	62.50	62.50	52.88
Malleable, Valley	70.20	70.20	70.20	70.20	60.43
Malleable, Chicago	66.50	66.50	66.50	66.50	56.50
Ferromanganese, net ton	245.00†	245.00†	245.00†	255.00†	200.00*

†74-76% Mn, Duquesne, Pa. *Etna, Pa.

SCRAP, Gross Ton (Including broker's commission)

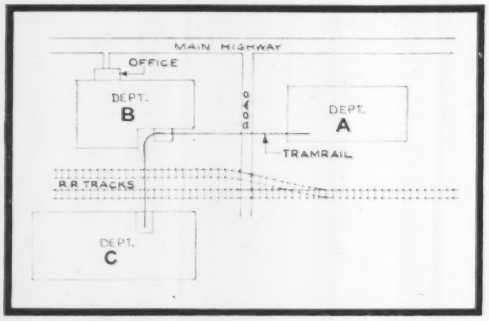
No. 1 Heavy Melt, Pittsburgh	$42.50	$42.50	$41.50	$54.50	$44.50
No. 1 Heavy Melt, E. Pa.	39.00	38.00	36.00	51.00	42.50
No. 1 Heavy Melt, Chicago	43.50	43.50	42.50	51.00	41.50
No. 1 Heavy Melt, Valley	43.50	43.50	43.50	54.50	42.50
No. 1 Heavy Melt, Cleve.	40.00	40.00	38.50	51.50	41.50
No. 1 Heavy Melt, Buffalo	34.50	34.50	27.50	49.50	42.50
Rails, Rerolling, Chicago	64.50	64.50	61.50	71.50	54.50
No. 1 Cast, Chicago	45.50	45.50	44.50	45.50	41.00

COKE, Net Ton

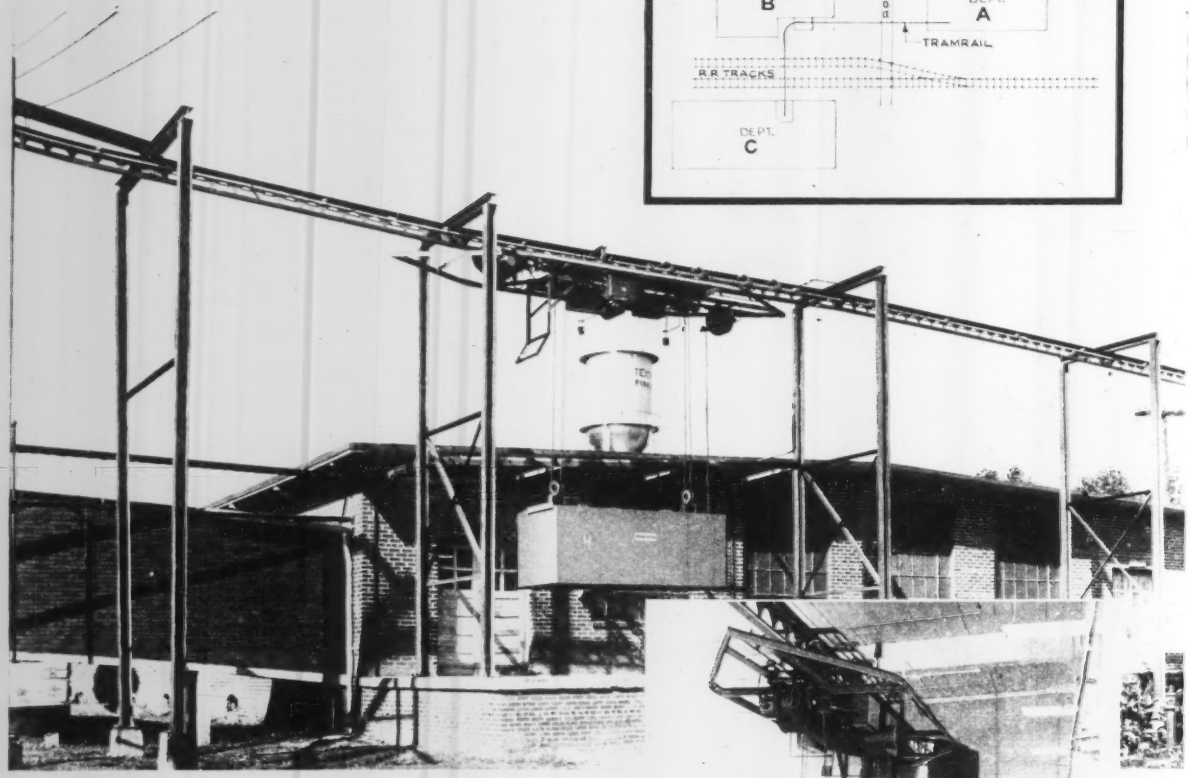
Beehive, Furn., Connlsvl.	$15.25	$15.25	$15.25	$15.25	$14.75
Beehive, Fdry., Connlsvl.	18.25	18.25	18.25	18.25	16.75

Automatic Handling Between Three Buildings

Operation Costs Plunge Because of Time Saved



Photograph shows van being lowered to outside dock. It remains here until unloaded or loaded and dispatched.

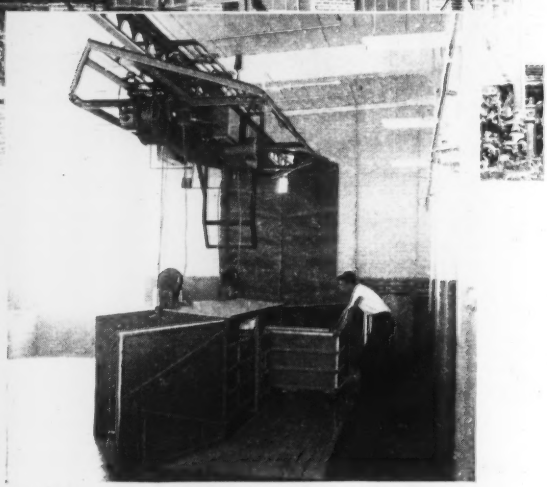


AN automatic Cleveland Tramrail materials handling system operates over a street and railroad to serve three separate buildings. It carries materials back and forth between the plants without need of especially assigned operators. The dispatching of materials is easily handled by men in the buildings along with their other work, since it is only necessary to press a push button to send a Tramrail carrier on its way.

The Tramrail carrier travels up and down grades because the buildings are at different elevations. When it reaches its destination, it lowers at once, automatically. A warning bell sounds as it descends.

Because of the time savings and elimination of need of many powered floor trucks and their expensive maintenance, cost of handling materials between the buildings is very low.

Cleveland Tramrail has engineered a wide variety of automatic materials handling systems. We stand ready to share with you the benefit of our experience.



Loading a Tramrail carrier van with four floor trucks. Each has a load of 250 lbs. Depressing the proper button on the wall sends the van to either of the other two buildings.

Write for free "Automatic Handling" booklet.

CLEVELAND TRAMRAIL

Overhead Materials Handling Equipment

CLEVELAND TRAMRAIL DIVISION • THE CLEVELAND CRANE & ENGINEERING CO. • 7836 E. 290 ST. • WICKLIFFE, OHIO

Steel Prices

Mill prices as reported to STEEL, Aug. 27, cents per pound except as otherwise noted. *Changes shown in italics.* Code number following mill points indicates producing company. Key to producers, page 96; footnotes, page 98.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)

Munhall,Pa. U5 ..... $76.00

INGOTS, Alloy (NT)

Detroit S41 ..... $82.00
Farrell Pa. S3 ..... 82.00
Lowellville,O. S3 ..... 82.00
Midland,Pa. C18 ..... 82.00
Munhall,Pa. U5 ..... 82.00
Sharon,Pa. S3 ..... 82.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)

Bartonville,Ill. K4 ..... $82.00
Bessemer,Pa. U5 ..... 80.00
Buffalo R2 ..... 80.00
Clairton,Pa. U5 ..... 80.00
Ensley,Ala. T2 ..... 80.00
Fairfield,Ala. T2 ..... 80.00
Fontana,Calif. K1 ..... 90.50
Gary,Ind. U5 ..... 80.00
Johnstown,Pa. B3 ..... 80.00
Lackawanna,N.Y. B2 ..80.00
Munhall,Pa. U5 ..... 80.00
Owensboro,Ky. G8 ..... 77.50
S.Chicago,Ill. R2, U5 ..80.00
S.Duquesne,Pa. U5 ....80.00
Sterling,Ill. N15 ..... 80.00
Youngstown R2 ..... 80.00

Carbon, Forging (NT)

Bessemer,Pa. N5 ....$99.50
Buffalo R2 ..... 99.50
Canton,O. R2 ..... 102.00
Clairton,Pa. U5 ..... 99.50
Conshohocken,Pa. A3..104.50
Ensley,Ala. T2 ..... 99.50
Fairfield,Ala. T2 ..... 99.50
Farrell,Pa. S3 ..... 99.50
Fontana,Calif. K1 ....109.00
Gary,Ind. U5 ..... 99.50
Geneva,Utah C11 ..... 99.50
Houston S5 ..... 104.50
Johnstown,Pa. B2 ..... 99.50
Lackawanna,N.Y. B2 ..99.50
LosAngeles B3 ..... 109.00
Midland,Pa. C18 ..... 99.50
Munhall,Pa. U5 ..... 99.50
Owensboro,Ky. C8 ..... 96.00
Seattle B3 ..... 113.00
Sharon,Pa. S3 ..... 99.50
S.Chicago R2, U5, W14..99.50
S.Duquesne Pa. U5 ....99.50
S.SanFrancisco B3 ..... 109.00
Warren,O. C17 ..... 99.50

Alloy, Forging (NT)

Bethlehem,Pa. R2 ....$119.00
Bridgeport,Conn. C32 .119.00
Buffalo R2 ..... 119.00
Canton,O. R2, T7 ..... 119.00
Conshohocken,Pa. A3 ..... 126.00
Detroit S41 ..... 119.00
Economy,Pa. B14 ..... 114.00
Farrell,Pa. S3 ..... 119.00
Fontana,Calif. K1 ..... 140.00
Gary,Ind. U5 ..... 119.00
Houston S5 ..... 124.00
Ind.Harbor,Ind. Y1 ....119.00
Johnstown,Pa. B2 ..... 119.00
Lackawanna,N.Y. B2..119.00
LosAngeles B3 ..... 139.00
Lowellville,O. S3 ..... 119.00
Massillon,O. R2 ..... 119.00
Midland,Pa. C18 ..... 119.00
Munhall,Pa. U5 ..... 119.00
Owensboro,Ky. G8 ..... 114.00
Sharon,Pa. S3 ..... 119.00
S.Chicago R2,U5,W14 ....119.00
S.Duquesne,Pa. U5 ....119.00
Struthers,O. Y1 ..... 119.00
Warren,O. C17 ..... 119.00

ROUNDS, SEAMLESS TUBE (NT)

Buffalo R2 ..... $122.50
Canton,O. R2 ..... 125.00
Cleveland R2 ..... 122.50
Gary,Ind. U5 ..... 122.50
S.Chicago,Ill. R2, W14 122.50
S.Duquesne,Pa. U5 ....122.50
Warren,O. C17 ..... 122.50

SKELP

Aliquippa,Pa. J5 ..... 5.05
Munhall Pa. U5 ..... 5.05
Pittsburgh J5 ..... 5.05
Warren,O. R2 ..... 5.05
Youngstown R2, U5 ....5.05

WIRE RODS

AlabamaCity,Ala. R2 ..6.40
Aliquippa,Pa. J5 ..... 6.40
Alton,Ill. L1 ..... 6.60
Bartonville,Ill. K4 ..... 6.50
Buffalo W12 ..... 6.40
Cleveland A7 ..... 6.40
Donora,Pa. A7 ..... 6.40
Fairfield,Ala. T2 ..... 6.40
Houston S5 ..... 6.65
IndianaHarbor,Ind. Y1..6.40
Johnstown,Pa. B2 ..... 6.40
Joliet,Ill. A7 ..... 6.40
KansasCity,Mo. S5 ..... 6.65
Kokomo,Ind. C16 ..... 6.50
LosAngeles B3 ..... 7.20
Minnequa,Colo. C10 ....6.65
Monessen,Pa. P7 ..... 6.40
N.Tonawanda,N.Y. B11 .6.40
Pittsburg,Calif. C11 ....7.20
Portsmouth,O. P12 ....6.40
Roebling,N.J. R5 ..... 6.50
S.Chicago,Ill. R2, W14..6.40
SparrowsPoint,Md. B2 ..6.50
Sterling,Ill.(1) N15 ....6.40
Sterling,Ill. N15 ..... 6.50
Struthers,O. Y1 ..... 6.40
Worcester,Mass. A7 ....6.70

STRUCTURALS

Carbon Steel Std. Shapes

AlabamaCity,Ala. R2 ..5.50
Atlanta A11 ..... 5.70
Aliquippa,Pa. J5 ..... 5.50
Bessemer,Ala. T2 ..... 5.50
Bethlehem,Pa. B2 ..... 5.55
Birmingham C15 ..... 5.50
Clairton,Pa. U5 ..... 5.50
Fairfield,Ala. T2 ..... 5.50
Fontana,Calif. K1 ..... 6.30
Gary,Ind. U5 ..... 5.50
Geneva,Utah C11 ..... 5.50
Houston S5 ..... 5.60
Ind.Harbor,Ind. I-2, Y1..5.50
Johnstown,Pa. B2 ..... 5.55
Joliet,Ill. P22 ..... 5.50
KansasCity,Mo. S5 ..... 5.60
Lackawanna,N.Y. B2 ..5.55
LosAngeles B3 ..... 6.20
Minnequa,Colo. C10 ....5.80
Munhall,Pa. U5 ..... 5.50
Niles,Calif. P1 ..... 6.25
Phoenixville,Pa. P4 ....5.55
Portland,Oreg. O4 ....6.025
Seattle B3 ..... 6.25
S.Chicago Ill. U5, W14..5.50
S.SanFrancisco B3 ..... 6.15
Sterling,Ill. N15 ..... 5.50
Torrance,Calif. C11 ..... 6.20
Weirton,W.Va. W6 ..... 5.50

Wide Flange

Bethlehem,Pa. B2 ..... 5.55
Clairton,Pa. U5 ..... 5.50
Fontana,Calif. K1 ..... 6.45
IndianaHarbor,Ind. I-2..5.50
Lackawanna,N.Y. B2 ..5.55
Munhall,Pa. U5 ..... 5.50
Phoenixville,Pa. P4 ....5.55
S.Chicago,Ill. U5 ..... 5.50
Weirton,W.Va. W6 ..... 5.50

Alloy Std. Shapes

Aliquippa,Pa. J5 ..... 6.80
Clairton,Pa. U5 ..... 6.80
Gary,Ind. U5 ..... 6.80
Houston S5 ..... 6.90
KansasCity,Mo. S5 ..... 6.90
Munhall,Pa. U5 ..... 6.80
S.Chicago,Ill. U5 ..... 6.80
S.Chicago,Ill. W14 ..... 6.80

H.S., L.A. Std. Shapes

Aliquippa,Pa. J5 ..... 8.05
Bessemer,Ala. T2 ..... 8.05
Bethlehem,Pa. B2 ..... 8.10
Clairton,Pa. U5 ..... 8.05
Fairfield,Ala. T2 ..... 8.05
Fontana,Calif. K1 ..... 8.85
Gary,Ind. U5 ..... 8.05
Geneva,Utah C11 ..... 8.05
Houston S5 ..... 8.15
Ind.Harbor,Ind. I-2, Y1..8.05
Johnstown Pa. B2 ..... 8.10
KansasCity,Mo. S5 ..... 8.15
Lackawanna,N.Y. B2 ..8.10
LosAngeles B3 ..... 8.75
Munhall Pa. U5 ..... 8.05
Seattle B3 ..... 8.80
S.Chicago Ill. U5, W14..8.05
S.SanFrancisco B3 ..... 8.70
Struthers,O. Y1 ..... 8.05

H.S., L.A. Wide Flange

Bethlehem,Pa. B2 ..... 8.10
Ind.Harbor,Ind. I-2 ....8.05
Lackawanna,N.Y. B2 ..8.10
Munhall,Pa. U5 ..... 8.05
S.Chicago,Ill. U5 ..... 8.05

PILING

BEARING PILES

Bethlehem,Pa. B2 ..... 5.55
Ind.Harbor,Ind. I-2 ....5.50
Lackawanna,N.Y. B2 ..5.55
Munhall,Pa. U5 ..... 5.50
S.Chicago,Ill. I-2, U5 ..5.50

STEEL SHEET PILING

Ind.Harbor,Ind. I-2 ....6.50
Lackawanna,N.Y. B2 ...6.50
Munhall,Pa. U5 ..... 6.50
S.Chicago,Ill. I-2, U5 ..6.50
Weirton,W.Va. W6 ..... 6.50

PLATES

PLATES, Carbon Steel

AlabamaCity,Ala. R2 ..5.30
Aliquippa,Pa. J5 ..... 5.30
Ashland,Ky.(15) A10 ...5.10
Atlanta A11 ..... 5.50
Bessemer,Ala. T2 ..... 5.30
Clairton,Pa. U5 ..... 5.30
Claymont,Del. C22 ..... 5.30
Cleveland J5, R2 ..... 5.30
Coatesville,Pa. L7 ..... 5.30
Conshohocken,Pa. A3 ..5.30
Ecorse,Mich. G5 ..... 5.30
Fairfield,Ala. T2 ..... 5.30
Farrell,Pa. S3 ..... 5.30
Fontana,Calif.(30) K1 ..6.10
Gary,Ind. U5 ..... 5.30
Geneva,Utah C11 ..... 5.30
Granite City,Ill. G4 ..... 5.40
Harrisburg,Pa. P4 ..... 5.30
Houston S5 ..... 5.40
Ind.Harbor,Ind. I-2, Y1..5.30
Johnstown,Pa. B2 ..... 5.30
Lackawanna,N.Y. B2 ..5.30
Mansfield,O. E6 ..... 5.30
Minnequa,Colo. C10 ....6.15
Munhall,Pa. U5 ..... 5.30
Newport,Ky. A2 ..... 5.30
Pittsburg,Calif. J5 ..... 5.30
Riverdale,Ill. A1 ..... 5.30
Seattle B3 ..... 6.20
Sharon,Pa. S3 ..... 5.30
S.Chicago,Ill. U5, W14..5.30
Sparrows Point,Md. B2 ..5.30
Sterling,Ill. N15 ..... 5.30
Steubenville,O. W10 ....5.30
Warren,O. R2 ..... 5.30
Youngstown U5, Y1 ....5.30

PLATES, Carbon Abras. Resist.

Claymont,Del. C22 ....6.75
Fontana,Calif. K1 ..... 7.75
Geneva,Utah C11 ..... 7.05
Houston S5 ..... 7.15
Johnstown,Pa. B2 ..... 7.05
Sparrow Point,Md. B2 ..7.05

PLATES, Wrought Iron

Economy,Pa. B14 .....13.15

PLATES, U.S. L.A.

Aliquippa,Pa. J5 ..... 7.95
Bessemer,Ala. T2 ..... 7.95
Clairton,Pa. U5 ..... 7.95
Claymont,Del. C22 ..... 7.95
Cleveland J5, R2 ..... 7.95
Coatesville,Pa. L7 ....7.625
Conshohocken,Pa. A3 ..7.95
Economy,Pa. B14 ....7.625
Ecorse,Mich. G5 ..... 7.95
Fairfield,Ala. T2 ..... 7.95
Farrell,Pa. S3 ..... 7.95
Fontana,Calif.(30) K1 ..8.75
Gary,Ind. U5 ..... 7.95
Geneva,Utah C11 ..... 7.95
Houston S5 ..... 8.05
Ind.Harbor,Ind. I-2, Y1..7.95
Johnstown,Pa. B2 ..... 7.95
Munhall,Pa. U5 ..... 7.95
Pittsburgh J5 ..... 7.95
Seattle B3 ..... 8.85
Sharon,Pa. S3 ..... 7.95
S.Chicago,Ill. U5, W14..7.95
Sparrows Point,Md. B2 ..7.95
Warren,O. R2 ..... 7.95
Youngstown U5, Y1 ....7.95

PLATES, ALLOY

Aliquippa,Pa. J5 ..... 7.50
Claymont,Del. C22 ..... 7.50
Coatesville,Pa. L17 ..... 7.50
Economy,Pa. B14 ..... 7.20
Farrell,Pa. S3 ..... 7.50
Fontana,Calif. K1 ..... 8.30
Gary,Ind. U5 ..... 7.50
Houston S5 ..... 7.60
Ind.Harbor,Ind. Y1 ..... 7.50
Johnstown,Pa. B2 ..... 7.50
Lowellville,O. S3 ..... 7.50
Munhall,Pa. U5 ..... 7.50
Newport,Ky. A2 ..... 7.50
Pittsburgh J5 ..... 7.50
Seattle B3 ..... 8.40
Sharon,Pa. S3 ..... 7.50
S.Chicago,Ill. U5, W14..7.50
SparrowsPoint,Md. B2 ..7.50
Youngstown Y1 ..... 7.50

FLOOR PLATES

Cleveland J5 ..... 6.375
Conshohocken,Pa. A3 ..6.375
Ind.Harbor,Ind. I-2 ....6.375
Munhall,Pa. U5 ..... 6.375
S.Chicago,Ill. U5 ..... 6.375

PLATES, Ingot Iron

Ashland c.l.(15) A10 ...5.35
Ashland l.c.l.(15) A10 ..5.85
Cleveland c.l. R2 ..... 6.05
Warren,O. c.l. R2 ..... 6.05

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)

Ala.City,Ala.(9) R2 ..5.675
Aliquippa,Pa.(9) J5 ..5.675
Alton,Ill. L1 ..... 5.875
Atlanta A11 ..... 5.875
Bessemer,Ala.(9) T2 ..5.675
Birmingham(9) C15 ...5.675
Buffalo(9) R2 ..... 5.675
Canton,O.(23) R2 ..... 6.15
Clairton,Pa.(9) U5 ....5.675
Cleveland(9) R2 ..... 5.675
Ecorse,Mich.(9) G5 ...5.675
Emeryville,Calif. J7 ...6.425
Fairfield,Ala.(9) T2 ..5.675
Fairless,Pa.(9) U5 ..... 5.825
Fontana,Calif.(9) K1 ..6.375
Gary,Ind.(9) U5 ..... 5.675
Houston(9) S5 ..... 5.925
Ind.Harbor(9) I-2, Y1 .5.675
Johnstown,Pa.(9) B2 ..5.675
Joliet,Ill. P22 ..... 5.675
KansasCity,Mo.(9) S5..5.925
Lackawanna(9) B2 ...5.675
LosAngeles(9) B3 ..... 6.375
Massillon,O.(23) R2 .... 6.15
Midland,Pa.(23) C18 ..6.025
Milton,Pa. M18 ..... 5.825
Minnequa,Colo. C10 ....6.125
Niles,Calif. P1 ..... 6.375
N.Tonawanda,N.Y.(23)B11 6.025
Owensboro,Ky.(9) G8..5.425
Pittsburg,Calif.(9) C11..6.375
Pittsburgh(9) J5 ..... 5.675
Portland,Oreg. O4 ....6.175
RiverdaleIll.(9) A1 ....5.675
Seattle B3, N14 ..... 6.425
S.Ch'c'go(9)R2,U5,W14 5.675
S.Duquesne,Pa.(9) U5..5.675
S.SanFran.,Calif.(9) B3 ..6.425
Sterling,Ill.(1)(9) N15..5.675
Sterling,Ill.(9) N15 ...5.775
Struthers,O.(9) Y1 ..... 5.675
Tonawanda,N.Y. B12 ..5.675
Torrance,Calif.(9) C11..6.375
Warren,O. C17 ..... 6.025
Youngstown(9) R2, U5..5.675

BARS, Hot-Rolled Alloy

Aliquippa,Pa. J5 ..... 6.725
Bethlehem,Pa. B2 ..... 6.725
Bridgeport,Conn. C32 ..6.80
Buffalo R2 ..... 6.725
Canton,O. R2, T7 ..... 6.725
Clairton,Pa. U5 ..... 6.725
Detroit S41 ..... 6.725
Economy,Pa. B14 ..... 6.475
Ecorse,Mich. G5 ..... 6.725
Fairless,Pa. U5 ..... 6.875
Farrell,Pa. S3 ..... 6.725
Fontana,Calif. K1 ..... 7.775
Gary,Ind. U5 ..... 6.725
Houston S5 ..... 6.975
Ind.Harbor,Ind. I-2, Y1..6.725
Johnstown,Pa. B2 ..... 6.725
KansasCity,Mo. S5 ..... 6.975
Lackawanna,N.Y. B2 ..6.725
Lowellville,O. S3 ..... 6.725
LosAngeles B3 ..... 7.275
Massillon,O. R2 ..... 6.725
Midland,Pa. C18 ..... 6.725
Owensboro,Ky. G8 ..... 6.475
Pittsburgh J5 ..... 6.725
Sharon,Pa. S3 ..... 6.725
S.Chicago R2, U5, W14..6.725
S.Duquesne,Pa. U5 ....6.725
Struthers,O. Y1 ..... 6.725
Warren,O. C17 ..... 6.725
Youngstown U5 ..... 6.725

BARS & SMALL SHAPES, H.R. High-Strength, Low-Alloy

Aliquippa,Pa. J5 ..... 8.30
Bessemer,Ala. T2 ..... 8.30
Bethlehem,Pa. B2 ..... 8.30
Clairton,Pa. U5 ..... 8.30
Cleveland R2 ..... 8.30
Ecorse,Mich. G5 ..... 8.30
Fairfield,Ala. T2 ..... 8.30
Fontana,Calif. K1 ....8.625
Gary,Ind. U5 ..... 8.30
Houston S5 ..... 8.55
Ind.Harbor,Ind. Y1 ....8.30
Johnstown,Pa. B2 ..... 8.30
KansasCity,Mo. S5 ..... 8.55
Lackawanna,N.Y. B2 ...8.30
LosAngeles B3 ..... 9.00
Pittsburgh J5 ..... 8.30
Seattle B3 ..... 9.05
S.Chicago,Ill. W14 ....8.30
S.Duquesne,Pa. U5 ..... 8.30
S.SanFrancisco B3 ..... 9.05
Struthers,O. Y1 ..... 8.30
Youngstown, U5 ..... 8.30

BAR SIZE ANGLES; H.R. Carbon

Bethlehem,Pa.(9) B2 ..5.825
Houston(9) S5 ..... 5.925
KansasCity,Mo.(9) S5..5.925
Lackawanna(9) B2 ....5.675
Sterling,Ill. N15 ..... 5.775
Sterling,Ill.(1) N15 ...5.675
Tonawanda,N.Y. B12 ..5.675

BAR SIZE ANGLES; S. Shapes

Aliquippa,Pa. J5 ..... 5.675
Atlanta A11 ..... 5.875
Joliet,Ill. P22 ..... 5.675
Minnequa,Colo. C10 ....6.125
Niles,Calif. P1 ..... 6.375
Pittsburgh J5 ..... 5.675
Portland,Oreg. O4 ....6.175
SanFrancisco S7 ..... 6.52
Seattle B3 ..... 6.425

BAR SHAPES, Hot-Rolled Alloy

Aliquippa,Pa. J5 ..... 6.80
Clairton,Pa. U5 ..... 6.80
Gary,Ind. U5 ..... 6.80
Houston S5 ..... 7.05
KansasCity,Mo. S5 .... 7.05
Pittsburgh J5 ..... 6.80
Youngstown U5 ..... 6.80

BARS, C. F. Leaded (Including leaded extra)

Carbon

LosAngeles P2, S30 ..11.75*

Alloy

Ambridge,Pa. W18 ..10.175
BeaverFalls,Pa. M12..10.175
Camden,N.J. P13 ..... 10.35
Chicago W18 ..... 10.175
Elyria,O. W8 ..... 10.175
Monaca,Pa. S17 ..... 10.175
Newark,N.J. W18 ..... 10.35
SpringCity,Pa. K3 ..... 10.35

*Grade A; add 0.050c for Grade B.

BARS, Cold-Finished Carbon

Ambridge,Pa. W18 ..... 7.65
BeaverFalls,Pa. M12,R2..7.65
Birmingham C15 ..... 8.25
Buffalo B5 ..... 7.70
Camden,N.J. P13 ..... 8.10
Carnegie,Pa. C12 ..... 7.65
Chicago W18 ..... 7.65
Cleveland A7, C20 ..... 7.65
Detroit B5, P17 ..... 7.85
Detroit S41 ..... 7.65
Donora,Pa. A7 ..... 7.65
Elyria,O. W8 ..... 7.65
FranklinPark,Ill. N5 ..... 7.65
Gary,Ind. R2 ..... 7.65
GreenBay,Wis. F7 ..... 7.65
Hammond,Ind. J5, L2 ..7.65
Hartford,Conn. R2 ....8.15
Harvey,Ill. B5 ..... 7.65
LosAngeles(49) S30 ....9.10
LosAngeles(49) P2, R2..9.10
Mansfield,Mass. B2 .... 8.20
Massillon,O. R2, R8 .... 7.65
Midland,Pa. C18 ..... 7.65
Monaca,Pa. S17 ..... 7.65
Newark,N.J. W18 ..... 8.10
NewCastle,Pa.(17) B4 ..7.65
Pittsburgh J5 ..... 7.65
Plymouth,Mich. P5 ..... 7.90
Putnam,Conn. W18 .... 8.20
Readville,Mass. C14 .... 8.20
S.Chicago,Ill. W14 ..... 7.65
SpringCity,Pa. K3 ..... 8.10
Struthers,O. Y1 ..... 7.65
Warren,O. C17 ..... 7.65
Willimantic,Conn. J5 .. 8.15
Waukegan,Ill. A7 ..... 7.65
Youngstown F3, Y1 ....7.65

BARS, Cold-Finished Carbon (Turned and Ground)

Cumberland,Md.(5) C19..6.55

BARS, Cold-Finished Alloy

Ambridge,Pa. W18 ....9.025
BeaverFalls,Pa. M12,R2 9.025
Bethlehem,Pa. B2 ..... 9.025
Bridgeport,Conn. C32 ..9.175
Buffalo B5 ..... 9.025
Camden,N.J. P13 ..... 9.20
Canton,O. T7 ..... 8.775
Carnegie,Pa. C12 ..... 9.025
Chicago W18 ..... 9.025
Cleveland A7, C20 ....9.025
Detroit B5, P17 ..... 9.225
Detroit S41 ..... 9.025
Donora,Pa. A7 ..... 9.025
Elyria,O. W8 ..... 9.025
FranklinPark,Ill. N5 ..... 9.025
Gary,Ind. R2 ..... 9.025
GreenBay,Wis. F7 ..... 9.025
Hammond,Ind. J5, L2..9.025
Hartford,Conn. R2 .... 9.325
Harvey,Ill. B5 ..... 9.025
Lackawanna,N.Y. B2 ..9.025
LosAngeles P2, S30 ....11.00
Mansfield,Mass. B5 .... 9.325
Massillon,O. R2, R8 ....9.025
Midland,Pa. C18 ..... 9.025
Monaca,Pa. S17 ..... 9.025
Newark,N.J. W18 ..... 9.20
Plymouth,Mich. P5 ....9.225
S.Chicago,Ill. W14 ....9.025
SpringCity,Pa. K3 ..... 9.20
Struthers,O. Y1 ..... 9.025
Warren,O. C17 ..... 9.025
Waukegan,Ill. A7 ..... 9.025
Willimantic,Conn. J5 ..9.325
Worcester,Mass. A7 ..... 9.325
Youngstown F3, Y1 ....9.025

BARS, Reinforcing (To fabricators)

AlabamaCity,Ala. R2 ..5.675
Atlanta A11 .....5.675
Birmingham C15 .....5.675
Buffalo R2 .....5.675
Cleveland R2 .....5.675
Ecorse,Mich. G5 .....5.675
Emeryville,Calif. J7 ...6.425
Fairfield,Ala. T2 .....5.675
Fairless,Pa. U5 .....5.825
Fontana,Calif. K1 .....6.375
Ft.Worth,Tex.(4)(26)T4 6.125
Gary,Ind. U5 .....5.675
Houston S5 .....5.925
Ind.Harbor,Ind. I-2, Y1 5.675
Johnstown,Pa. B2 ....5.675
Joliet,Ill. P22 .....5.675
KansasCity,Mo. S5 ....5.925
Kokomo,Ind. C16 .....5.775
Lackawanna,N.Y. B2 ..5.675
Los Angeles B3 .....6.375
Madison,Ill. L1 .....5.825
Milton,Pa. M18 .....5.825
Minnequa,Colo. C10 ...6.125
Niles,Calif. P1 .....6.375
Pittsburg,Calif. C11 ...6.375
Pittsburgh J5 .....5.675
Portland,Oreg. O4 ....6.175
SandSprings,Okla. S5 ..5.925
Seattle B3, N14 .....6.425
S.Chicago,Ill. R2, W14 5.675
S.Duquesne,Pa. U5 ....5.675
S.SanFrancisco B3 .....6.425
SparrowsPoint,Md. B2 .5.675
Sterling,Ill.(4) N15 ....5.675
Sterling,Ill. N15 .....5.775
Struthers,O. Y1 .....5.675
Tonawanda,N.Y. B12 ...6.10
Torrance,Calif. C11 ...6.375
Youngstown R2, U5 ..5.675

BARS, Reinforcing (Fabricated; to Consumers)

Baltimore B2 .....7.42
Boston B2, U8 .....8.15
Chicago U8 .....7.41
Cleveland U8 .....7.39
Houston S5 .....7.60
Johnstown,Pa. B2 .....7.33
KansasCity,Mo. S5 .....7.60
Lackawanna,N.Y. B2 .....7.35
Marion,O. P11 .....6.70
Newark,N.J. U8 .....7.80
Philadelphia U8 .....7.63
Pittsburgh J5, U8 .....7.35
SandSprings,Okla. S5 ....7.60
Seattle B3, N14 .....7.70
SparrowsPt., Md. B2 .....7.33
St.Paul U8 .....8.17
Williamsport,Pa. S19 ...7.25

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 14.45
Economy,Pa.(D.R.)B14 18.00
Economy(Stayblt)B14 18.45

RAIL STEEL BARS

ChicagoHts.(3) C2, I-2 5.575
ChicagoHts.(4)(44) I-2 5.675
ChicagoHts.(4) C2 ....5.675
Franklin,Pa.(3) F5 ....5.575
Franklin,Pa.(4) F5 ....5.675
JerseyShore,Pa.(3) J8 .....5.55
Marion,O.(3) P11 .....5.325
Tonawanda(3) B12 ....5.575
Tonawanda(4) B12 .....6.10

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

AlabamaCity,Ala. R2 ...5.10
Allenport,Pa. P7 .....5.10
Aliquippa,Pa. J5 .....5.10
Ashland,Ky.(8) A10 ...5.10
Cleveland J5, R2 .....5.10
Conshohocken,Pa. A3 ..5.15
Detroit(8) M1 .....5.10
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 .....5.10
Fairless,Pa. U5 .....5.15
Farrell,Pa. S3 .....5.10
Fontana,Calif. K1 ....5.675
Gary,Ind. U5 .....5.10
Geneva,Utah C11 .....5.20
GraniteCity,Ill.(8) G4 ...5.20
Ind.Harbor,Ind. I-2, Y1 5.10
Irvin,Pa. U5 .....5.10
Lackawanna,N.Y. B2 ...5.10
Mansfield,O. E6 .....5.10
Munhall,Pa. U5 .....5.10
Newport,Ky. A2 .....5.10
Niles,O. M21, S3 .....5.10
Pittsburg,Calif. C11 ....5.80
Pittsburgh J5 .....5.10
Portsmouth,O. P12 .....5.10
Riverdale,Ill. A1 .....5.10
Sharon,Pa. S3 .....5.10
S.Chicago,Ill. U5, W14 5.10
SparrowsPoint,Md. B2 ..5.10
Steubenville,O. W10 ...5.10
Warren,O. R2 .....5.10
Weirton,W.Va. W6 .....5.10
Youngstown U5, Y1 ...5.10

SHEETS, H.R. (19 Ga. & Lighter)

Niles,O. M21 .....6.275

SHEETS, H.R. Alloy

Gary,Ind. U5 .....8.40
Ind Harbor,Ind. Y1 ....8.10
Irvin,Pa. U5 .....8.40
Munhall,Pa. U5 .....8.40
Newport,Ky. A2 .....8.40
Youngstown U5 .....8.40
Youngstown Y1 .....8.10

SHEETS, H.R. (14 Ga. & Heavier) High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....7.525
Cleveland J5, R2 .....7.525
Conshohocken,Pa. A3 ..7.575
Ecorse,Mich. G5 .....7.525
Fairfield,Ala. T2 .....7.525
Fairless,Pa. U5 .....7.575
Farrell,Pa. S3 .....7.525
Fontana,Calif. K1 ....8.025
Gary,Ind. U5 .....7.525
Ind.Harbor,Ind. I-2, Y1 7.525
Irvin,Pa. U5 .....7.525
Lackawanna(35) B2 ..7.525
Munhall,Pa. U5 .....7.525
Pittsburgh J5 .....7.525
S.Chicago,Ill. U5, W14 7.525
Sharon,Pa. S3 .....7.525
SparrowsPoint(36) B2..7.525
Warren,O. R2 .....7.525
Weirton,W.Va. W6 ....7.525
Youngstown U5, Y1 ..7.525

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ...5.35
Cleveland R2 .....5.875
Warren,O. R2 .....5.875

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....7.05
Middletown,O. A10 ....6.775
Warren,O. R2 .....7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity,Ala. R2 ..6.275
Allenport,Pa. P7 .....6.275
Aliquippa,Pa. J5 .....6.275
Cleveland J5, R2 .....6.275
Conshohocken,Pa. A3 ..6.325
Detroit M1 .....6.275
Ecorse,Mich. G5 .....6.275
Fairfield,Ala. T2 .....6.275
Fairless,Pa. U5 .....6.325
Follansbee,W.Va. F4 ..6.275
Fontana,Calif. K1 .....7.30
Gary,Ind. U5 .....6.275
GraniteCity,Ill. G4 ....6.375
Ind Harbor,Ind. I-2, Y1 6.275
Irvin,Pa. U5 .....6.275
Lackawanna,N.Y. B2 ..6.275
Mansfield,O. E6 .....6.275
Middletown,O. A10 ....6.275
Newport,Ky. A2 .....6.275
Pittsburg,Calif. C11 ..7.225
Pittsburgh J5 .....6.275
Portsmouth,O. P12 ....6.275
SparrowsPoint,Md. B2..6.275
Steubenville,O. W10 ..6.275
Warren,O. R2 .....6.275
Weirton,W.Va. W6 ....6.275
Yorkville,O. W10 .....6.275
Youngstown Y1 .....6.275

SHEETS, Cold-Rolled, High-Strength, Low Alloy

Aliquippa,Pa. J5 .....9.275
Cleveland J5, R2 .....9.275
Ecorse,Mich. G5 .....9.275
Fairless,Pa. U5 .....9.325
Fontana,Calif. K1 ....10.275
Gary,Ind. U5 .....9.275
Ind.Harbor,Ind. I-2,Y1 9.275
Irvin,Pa. U5 .....9.275
Lackawanna(37) B2 ..9.275
Pittsburgh J5 .....9.275
SparrowsPoint(38) B2..9.275
Warren,O. R2 .....9.275
Weirton,W.Va. W6 ....9.275
Youngstown Y1 .....9.275

SHEETS, Culvert

	Cu Steel	Cu Fe
Ashland,Ky. A10	7.225	7.475
Canton,O. R2	7.225	7.75
Fairfield T2	7.225	7.475
Gary,Ind. U5	7.225	7.475
GraniteCity,Ill.G4	7.325	....
Ind.Harbor I-2	7.225	7.475
Irvin,Pa. U5	7.225	7.475
Kokomo,Ind. C16	7.325	....
MartinsFry. W10	7.225	7.475
Pitts.,Calif. C11	7.975	....
Pittsburgh J5	7.225	....
SparrowsPt. B2	7.225	....

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2 ..7.475

SHEETS, Galvanized Steel Hot-Dipped

AlabamaCity,Ala. R2 6.875‡
Ashland,Ky. A10 .....6.875†
Canton,O. R2 .....6.875‡
Dover,O. E6 .....6.875†
Fairfield,Ala. T2 .....6.875†
Gary,Ind. U5 .....6.875†
GraniteCity,Ill. G4 ..6.975*
Ind.Harbor,Ind. I-2 ..6.875†
Irvin,Pa. U5 .....6.875†
Kokomo,Ind. C16 ....6.975‡
MartinsFerry,O. W10 .6.875*
Middletown,O. A10 ..6.875†
Pittsburg,Calif. C11 ..7.625*
Pittsburgh J5 .....6.875†
SparrowsPt.,Md. B2 ..6.875†
Warren,O. R2 .....6.875†
Weirton,W.Va. W6 ...6.875*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 ....7.175

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin,Pa. U5 .....10.025
SparrowsPt.(39) B2 ..10.025
Pittsburgh J5 .....10.025

SHEETS, Galvannealed Steel

Canton,O. R2 .....7.275
Irvin,Pa. U5 .....7.275

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland,Ky. A10 .....7.125
Middletown,O. A10 ....7.125

SHEETS, Electrogalvanized

Cleveland(28) R2 .....7.65
Niles,O.(28) R2 .....7.65
Youngstown J5 .....7.50
Weirton,W.Va. W6 ....7.50

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) 9.525
Butler,Pa. A10 (type 2) 9.625

SHEETS, Enameling Iron

Ashland,Ky. A10 .....6.775
Cleveland R2 .....6.775
Fairfield,Ala. T2 .....6.775
Gary,Ind. U5 .....6.775
GraniteCity,Ill. G4 ....6.875
Ind.Harbor,Ind. I-2,Y1 6.775
Irvin,Pa. U5 .....6.775
Middletown,O. A10 ....6.775
Niles,O. M21, S3 ....6.775
Youngstown Y1 .....6.775

BLUED STOCK, 29 Gage

Follansbee,W.Va. F4 ..8.70
Ind.Harbor,Ind. I-2 ..8.70
Mansfield,O. E6 .....8.70
Yorkville,O. W10 .....8.70

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va.W10 7.225
Gary,Ind. U5 .....7.225
Mansfield,O. E6 .....7.225
Middletown,O. A10 ....7.225
Niles,O. M21, S3 .....7.225
Warren,O. R2 .....7.225
Weirton,W.Va. W6 ....7.225

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....7.625

Key To Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke,Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div., H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Plant, Wickwire Spencer Steel Div., Colo. Fuel & Iron
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C32 CarpenterSteelofN.Eng.

D2 Detroit Steel Corp.
D3 Dearborn Div., Sharon Steel Corp.
D4 Disston Div., H. K. Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas&FuelAssoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire-Reeves Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins Steel Tube Works
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.
L8 Leschen Wire Rope Div., H. K. Porter Co. Inc.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md.Fine&Special.Wire
M17 Metal Forming Corp.
M18 Milton Steel Div., Merritt-Chapman&Scott
M21 Mallory-Sharon Metals Corp.
M22 Mill Strip Products Co.

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelson Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N14 Northwest. Steel Rolling Mills Inc.
N15 Northwestern S.&W.Co.
N20 Neville Ferro Alloy Co.

O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co., Sub. of Barium Steel Corp.
P5 Pilgrim Drawn Steel
P6 PittsburghCoke&Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Div., Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., American Chain & Cable
P17 Plymouth Steel Corp.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.

R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div., Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Div., Copperweld Steel Co.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service
S41 Stainless & Strip Div., J&L Steel Corp.
S42 Southern Elec. Steel Co.
T2 Tenn. Coal & Iron Div., U. S. Steel Corp.
T3 Tenn. Products & Chemical Corp.
T4 Texas Steel Co.
T5 Thomas Strip Div., Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div., U. S. Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan-Kidd Steel Div., H. K. Porter Co.

W1 Wallace Barnes Steel Div., Associated Spring Corp.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.

Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala. (27) R2 ..5.10
Allenport,Pa. P7 .....5.10
Alton,Ill. L1 .....5.30
Ashland,Ky.(8) A10 ....5.10
Atlanta A11 .....5.10
Bessemer,Ala. T2 .....5.10
Birmingham C15 .....5.10
Buffalo(27) R2 .....5.10
Conshohocken,Pa. A3 ..5.15
Detroit M1 .....5.10
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 .....5.10
Farrell,Pa. S3 .....5.10
Fontana,Calif. K1 ....5.675
Gary,Ind. U5 .....5.10
Ind.Harbor,Ind. I-2, Y1 5.10
Johnstown,Pa.(25) B2 ..5.10
Lackaw'na,N.Y.(25) B2 5.10
LosAngeles(25) B3 ....5.85
Minnequa,Colo. C10 ....6.20
Riverdale,Ill. A1 .....5.10
SanFrancisco S7 .....6.60
Seattle(25) B3 .....6.10
Seattle N14 .....6.35
Sharon,Pa. S3 .....5.10
S.Chicago W14 .....5.10
S.SanFrancisco(25) B3 5.85
SparrowsPoint,Md. B2 ..5.10
Torrance,Calif. C11 ....5.85
Warren,O. R2 .....5.10
Weirton,W.Va. W6 ....5.10
Youngstown U5 .....5.10

STRIP, Hot-Rolled Alloy

Carnegie,Pa. S18 .....8.10
Farrell,Pa. S3 .....8.40
Gary,Ind. U5 .....8.40
Houston S5 .....8.65
Ind.Harbor,Ind. Y1 ....8.10
KansasCity,Mo. S5 .....8.65
LosAngeles B3 .....9.30
Lowellville,O. S3 .....8.40
Newport,Ky. A2 .....8.40
Sharon,Pa. A2, S3 .....8.40
S.Chicago,Ill. W14 .....8.40
Youngstown U5 .....8.40
Youungstown Y1 .....8.10

STRIP, Hot-Rolled High-Strength, Low-Alloy

Bessemer,Ala. T2 ....7.575
Conshohocken,Pa. A3 ..7.575
Ecorse,Mich. G5 .....7.575
Fairfield,Ala. T2 .....7.575
Farrell,Pa. S3 .....7.575
Gary,Ind. U5 .....7.575
Ind.Harbor,Ind. I-2,Y1 7.575
Lackawanna,N.Y. B2 ..7.575
LosAngeles(25) B3 ....8.325
Seattle(25) B3 .....8.575
Sharon,Pa. S3 .....7.575
S.Chicago,Ill. W14 ....7.575
S.SanFrancisco(25) B3 8.325
SparrowsPoint,Md. B2 7.575
Warren,O. R2 .....7.575
Weirton,W.Va. W6 ....7.575
Youngstown U5, Y1 ..7.575

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10 ...5.35
Warren,O. R2 ..... 5.875

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6 .....7.425
Baltimore T6 .....7.425
Boston T6 .....7.975
Buffalo S40 .....7.425
Cleveland A7, J5 ...7.425
Dearborn,Mich. D3 ....7.425
Detroit D2, M1, P20 ..7.425
Dover,O. G6 .....7.425
Ecorse,Mich. G5 .....7.15
Evanston,Ill. M22 ....7.525
Farrell,Pa. S3 .....7.425
Follansbee,W.Va. F4 ..7.425
Fontana,Calif. K1 .....9.00
FranklinPark,Ill. T6 ..7.525
Ind.Harbor,Ind. Y1 ....7.425
Indianapolis S41 .....7.575
LosAngeles J5 .....9.325
LosAngeles C1 .....9.20
NewBedford,Mass. R10 .7.875
NewBritain,Conn. S15 ..7.875
NewCastle,Pa. B4, E5 ..7.425
NewHaven,Conn. D2 ....7.875
NewKensington,Pa. A6 .7.425
Pawtucket,R.I. R3 ....7.975
Pawtucket,R.I. N8 ....7.975
Philadelphia P24 .....7.875
Pittsburgh J5 .....7.425
Riverdale,Ill. A1 .....7.525
Rome,N.Y.(32) R6 .....7.425
Sharon,Pa. S3 .....7.425
Trenton,N.J.(31) R5 ..8.875
Wallingford,Conn. W2 ..7.875
Warren,O. R2, T5 ....7.425
Weirton,W.Va. W6 ....7.425
Worcester,Mass. A7 ...7.975
Youngstown S41, Y1 ...7.425

STRIP, Cold-Rolled Alloy

Boston T6 .....15.90
Carnegie,Pa. S18 .....15.05
Cleveland A7 .....15.05
Dover,O. G6 .....15.55
Farrell,Pa. S3 .....15.55
FranklinPark,Ill. T6 ..15.55
Harrison,N.J. C18 ....15.05
Indianapolis S41 .....15.70
Lowellville,O. S3 .....15.55
Pawtucket,R.I. N8 .....15.90
Riverdale,Ill. A1 .....15.55
Sharon,Pa. S3 .....15.55
Worcester,Mass. A7 ...15.35
Youngstown S41 .....15.55

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7 .....10.45
Dearborn,Mich. D3 ....10.80
Dover,O. G6 .....10.80
Ecorse,Mich. G5 .....10.50
Farrell,Pa. S3 .....10.80
Ind.Harbor,Ind. Y1 ....10.80
Sharon,Pa. S3 .....10.80
Warren,O. R2 .....10.80

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol,Conn. W1	...	10.70	12.90	16.10	19.30
Carnegie,Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn,Mich. D3	9.05	10.50	12.70	....	....
Detroit D2	9.05	10.50	12.70	15.70	....
Dover,O. G6	8.95	10.40	12.60	15.60	18.55
Evanston,Ill. M22	8.95	10.40	12.60	15.60	....
Farrell,Pa. S3	8.95	10.40	12.60	15.60	18.55
Fostoria,O. S1	10.05	10.40	12.60	15.60	....
FranklinPark,Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison,N.J. C18	....	....	12.90	16.10	19.30
Indianapolis J5	9.10	10.55	12.60	15.60	18.55
LosAngeles C1	11.15	12.60	14.80	17.80	....
LosAngeles J5	11.15	12.60	14.80	....	....
NewBritain,Conn. S15	9.40	10.4[illegible]	12.90	15.90	18.85
NewCastle,Pa. B4, E5	8.95	10.4[illegible]	12.60	15.60	....
NewHaven,Conn. D2	9.40	10.[illegible]	12.90	15.90	....
NewKensington,Pa. A6	8.95	10.[illegible]	12.60	15.60	....
NewYork W3	....	10.[illegible]	12.90	16.10	19.30
Pawtucket,R.I. N8	9.50	10.7[illegible]	12.90	15.90	18.85
Riverdale,Ill. A1	9.05	10.4[illegible]	12.60	15.60	18.55
Rome,N.Y.(32) R6	8.95	10.4[illegible]	12.60	15.60	18.55
Sharon,Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton,N.J. R5	....	10.[illegible]	12.90	15.90	18.85
Wallingford,Conn. W2	9.40	10.70	12.90	15.90	18.75
Warren,O. T5	8.95	10.4[illegible]	12.60	15.60	18.55
Worcester,Mass. A7, T6	9.50	10.[illegible]	12.90	15.90	18.85
Youngstown J5	8.95	10.4[illegible]	12.60	15.60	18.55

Spring Steel (Tempered)	Up to 0.80C	0.81-1.05C	1.06-1.35C
Bristol,Conn. W1	*18.85*	*22.95*	*27.80*
Buffalo W12	*18.85*		
Fostoria,O. S1	18.30	22.15	....
FranklinPark,Ill. T6	19.20	23.30	28.15
Harrison,N.J. C18	18.10	21.95	26.30
NewYork W3	*18.85*	*22.95*	*27.80*
Palmer,Mass. W12	*18.85*		
Trenton,N.J. R5	18.85	22.95	27.80
Worcester,Mass. T6	18.85	22.95	27.80
Worcester,Mass. A7	*18.85*	*22.95*	*27.80*
Youngstown J5	18.40	22.30	26.65

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2 .....8.175

STRIP, C.R. Electrogalvanized

Cleveland A7 .....7.15*
Dover,O. G6 .....7.425*
*Evanston,Ill. M22 .....7.525**
Riverdale,Ill. A1 .....7.525*
Warren,O. B9, S3, T5 7.425*
Worcester,Mass. A7 ....7.70*
Youngstown J5 .....7.15*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Farrell,Pa. S3 .....7.50
Sharon,Pa. S3 .....7.50

TIGHT COOPERAGE HOOP

Atlanta A11 .....5.65
Farrell,Pa. S3 .....5.525
Riverdale,Ill. A1 .....5.675
Sharon,Pa. S3 .....5.525
Youngstown U5 .....5.525

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	.25 lb	.50 lb	.75 lb
Aliquippa,Pa. J5	$8.75	$9.00	$9.40
Fairfield,Ala. T2	8.85	9.10	9.50
Fairless,Pa. U5	8.85	9.10	9.50
FranklinPark,Ill. T6	19.20	23.30	28.15
Gary,Ind. U5	8.75	9.00	9.40
GraniteCity,Ill. G4	8.85	9.10	9.50
IndianaHarbor,Ind. I-2, Y1	8.75	9.00	9.40
Irvin,Pa. U5	8.75	9.00	9.40
Niles,O. R2	8.75	9.00	9.40
Trenton,N.J. R5	18.85	22.95	27.80
Worcester,Mass. T6	18.85	22.95	27.50
Weirton,W.Va. W6	8.75	9.00	9.40
Yorkville,O. W10	8.75	9.00	9.40

ELECTROTIN (22-27 Gage; Dollars per 100 lb)			
Aliquippa,Pa. J5	7.725	7.925	....
Niles,O. R2	7.725	7.925	8.125

TIN PLATE, American	1.25 lb	1.50 lb
Aliquippa,Pa.J5	$10.05	$10.30
Fairfield,Ala. T2	10.15	10.40
Fairless,Pa. U5	10.15	10.40
Fontana,Calif.K1	10.80	11.05
Gary,Ind. U5	10.05	10.30
Ind.Harb. Y1	10.05	10.30
Pitts.,Calif. C11	10.80	11.05
Sp.Pt.,Md. B2	10.15	10.40
Weirton,W.Va.W6	10.05	10.30
Yorkville,O. W10	10.05	10.30

BLACK PLATE (Base Box)	
Aliquippa,Pa. J5	$7.85
Fairfield,Ala. T2	7.95
Fairless,Pa. U5	7.95
Fontana,Calif. K1	8.60
Gary,Ind. U5	7.85
GraniteCity,Ill. G4	7.95
Ind.Harbor,Ind. I-2, Y1	7.85
Irvin,Pa. U5	7.85
Niles,O. R2	7.85
Pittsburg,Calif. C11	8.60
SparrowsPoint,Md. B2	7.95
Weirton,W.Va. W6	7.85
Yorkville,O. W10	7.85

HOLLOWARE ENAMELING Black Plate (29 Gage)	
Aliquippa,Pa. J5	7.50
Gary,Ind. U5	7.50
GraniteCity,Ill. G4	7.60
Ind.Harbor,Ind. Y1	7.50
Irvin,Pa. U5	7.50
Yorkville,O. W10	7.50

MANUFACTURING TERNES (Special Coated, Base Box)	
Gary,Ind. U5	$9.70
Irvin,Pa. U5	9.70

ROOFING SHORT TERNES (8 lb Coated, Base Box)	
Gary,Ind. U5	$11.25

SILICON STEEL

COILS & CUT LENGTHS (22 Ga.) Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	11.70	12.40	13.55	14.65
Brackenridge,Pa. A4		*12.40*	*13.55*	*13.55*	*14.65*
GraniteCity,Ill. G4	9.975*	11.30*	12.00*	13.15*	....
IndianaHarbor,Ind. I-2	9.875*	11.20*	11.90*	13.05*	....
Mansfield,O. E6	9.875*	11.70	12.40	13.55	14.65
Newport,Ky. A2	9.875	11.70*	12.40*	13.55*	14.65*
Niles,O. M21	9.875*	11.70	12.40	13.55	....
Vandergrift,Pa. U5	9.875*	11.70	12.40	13.55	14.65
Warren,O. R2	9.875*	11.70	12.40	13.55	14.65
Zanesville,O. A10	....	11.70†	12.40	13.55	14.65

	Stator
Vandergrift,Pa. U5	8.10
Mansfield,O. E6	8.10

SHEETS (22 Ga., coils & cut lengths Fully Processed (Semiprocessed ½c lower)	T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	15.70	16.30	16.80	17.85
Vandergrift,Pa. U5	15.70	16.30	16.80	17.85
Zanesville,O. A10	15.70	16.30	16.80	17.85

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge,Pa. A4		*18.10*	*19.70*	*20.20*	*20.70*	*15.70*††
Butler,Pa. A10	....	....	19.70	20.20	20.70	....
Vandergrift,Pa. U5	17.10	18.10	19.70	20.20	20.70	15.70
Warren,O. R2	....	....	....	....	....	15.70‡

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. ††Coils only.

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2 ..8.00
Aliquippa,Pa. J5 .....8.00
Alton,Ill. L1 .....8.20
Atlanta A1 .....8.00
Bartonville,Ill. K4 .....8.10
Buffalo W12 .....8.00
Chicago W13 .....8.00
Cleveland A7, C20 ....8.00
Crawfordsville,Ind. MS .8.10
Donora,Pa. A7 .....8.00
Duluth A7 .....8.00
Fairfield,Ala. T2 .....8.00
Fostoria,O.(24) S1 ....8.10
Houston S5 .....8.25
Jacksonville,Fla. 8.35
Johnstown,Pa. B2 .....8.00
Joliet,Ill. A7 .....8.00
KansasCity,Mo. S5 ....8.25
Kokomo,Ind. C16 .....8.10
LosAngeles B3 .....8.95
Minnequa,Colo. C10 ....8.25
Monessen,Pa. P7, P16 ..8.00
N.Tonawanda,N.Y. B11 .8.00
Palmer,Mass. W12 ....8.30
Pittburg,Calif. C11 ....8.95
Portsmouth,O. P12 ....8.00
Rankin,Pa. A7 .....8.00
S.Chicago,Ill. R2 .....8.00
S.SanFrancisco C10 ....8.95
SparrowsPoint,Md. B2 ..8.10
Sterling,Ill.(1) N15 ...8.00
Sterling,Ill. N15 .....8.10
Struthers,O. Y1 .....8.00
Waukegan,Ill. A7 .....8.00
Worcester,Mass. A7 ....8.30

WIRE, Cold Heading Carbon

Elyria,O. W8 .....8.00

WIRE, Gal'd., for ACSR

Bartonville,Ill. K4 ....12.65
Buffalo W12 .....13.40
Cleveland A7 .....12.65
Donora,Pa. A7 .....12.65
Duluth A7 .....12.65
Johnstown,Pa. B2 .....12.65
Minnequa,Colo. C10 ....13.525
Monessen,Pa. P7, P16..12.65
Muncie,Ind. I-7 .....12.85
NewHaven,Conn. A7 ...12.95
Palmer,Mass. W12 ....13.70
Pittsburg,Calif. C11 ...13.45
Portsmouth,O. P12 ....12.65
Roebling,N.J. R5 .....13.70
SparrowsPt.,Md. B2 ...12.75
Struthers,O. Y1 .....12.65
Trenton,N.J. A7 .....12.95
Waukegan,Ill. A7 .....12.65
Worcester,Mass. A7 ...12.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5 .....9.75
Alton,Ill. L1 .....9.95
Buffalo W12 .....9.75
Cleveland A7 .....9.75
Donora,Pa. A7 .....9.75
Duluth A7 .....9.75
Johnstown,Pa. B2 .....9.75
KansasCity,Mo. S5 ....10.00
LosAngeles B3 .....10.70
Minnequa,Colo. C10 ....9.95
Monessen,Pa. P7, P16 ..9.75
NewHaven,Conn. A7 ....10.05
Palmer,Mass. W12 ....10.05
Pittsburg,Calif. C11 ..10.25
Portsmouth,O. P12 ....9.75
Roebling,N.J. R5 .....9.60
S.Chicago,Ill. R2 .....9.75
S.SanFrancisco C10 ....10.70
SparrowsPt.,Md. B2 ...9.85
Struthers,O. Y1 .....9.75
Trenton,N.J. A7 .....10.05
Waukegan,Ill. A7 .....9.75
Worcester,Mass. A7 ..10.05

WIRE, MB Spring, High-Carbon

Aliquippa,Pa. J5 .....9.75
Alton,Ill. L1 .....9.95
Bartonville,Ill. K4 .....9.85
Buffalo W12 .....9.75
Cleveland A7 .....9.75
Donora,Pa. A7 .....9.75
Duluth A7 .....9.75
Fostoria,O. S1 .....9.80
Johnstown,Pa. B2 .....9.75
KansasCity,Mo. S5 ....10.00
LosAngeles B3 .....10.70
Milbury,Mass.(12) N6 10.05
Minnequa,Colo. C10 ....9.95
Monessen,Pa. P7, P16 ..9.75
Muncie,Ind. I-7 .....9.80
Palmer,Mass. W12 ....10.05
Pittsburg,Calif. C11 ..10.20
Portsmouth,O. P12 .....9.75
Roebling,N.J. R5 .....10.05
S.Chicago,Ill. R2 .....9.75
S.SanFrancisco C10 ....10.70
SparrowsPt.,Md. B2 ....9.85
Struthers,O. Y1 .....9.75
Trenton,N.J. A7 .....10.05
Waukegan,Ill. A7 .....9.75
Worceter,Mass. T6 ....10.05
Worcester, Mass. A7, J4 10.05

WIRE, Fine & Weaving(8" Coils)

Alton,Ill. L1 .....15.80
Bartonville,Ill. K4 ....15.70
Chicago W13 .....16.30
Cleveland A7 .....15.60
Crawfordsville,Ind. MS.15.70
Fostoria,O. S1 .....15.60
Houston S5 .....15.85
Jacksonville,Fla. MS ..15.95
Johnstown,Pa. B2 .....15.60
KansasCity,Mo. S5 ....15.85
Kokomo,Ind. C16 .....15.60
Monessen,Pa. P16 .....15.60
Muncie,Ind. I-7 .....15.80
Palmer,Mass. W12 ....16.60
S.SanFrancisco C10 ...17.15
Waukegan,Ill. A7 .....15.60
Worcester,Mass. T6 ....16.60
Worcester,Mass. A7 ...15.90

ROPE WIRE	(A)
Bartonville,Ill. K4	*13.45*
Buffalo W12	13.45
Fostoria,O. S1	12.75
Johnstown,Pa. B2	*13.45*
Monessen,Pa. P7	12.75
Muncie,Ind. I-7	12.95
Palmer,Mass. W12	13.75
Portsmouth,O. P12	12.75
Roebling,N.J. R5	13.75
St.Louis L8	12.75
SparrowsPt.,Md. B2	*13.55*
Struthers,O. Y1	12.75
Worcester,Mass. J4	13.05

(A) Plow and Mild Plow; add 0.25c for Improved Plow

WIRE, Tire Bead

Bartonville,Ill. K4	16.55
Monessen,Pa. P16	16.55
Roebling,N.J. R5	17.65

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	*12.35*
Baltimore T6	12.65
Boston T6	12.65
Buffalo W12	11.65
Chicago W13	11.75
Cleveland A7	11.65
Crawfordsville,Ind. MS	11.65
Dover,O. G6	*12.35*
Farrell,Pa. S3	11.65
Fostoria,O. S1	11.65
FranklinPark,Ill. T6	12.45
Kokomo,Ind. C16	11.65
Massillon,O. R8	11.65
Milwaukee C23	11.85
Monessen,Pa. P7, P16	11.65
Palmer,Mass. W12	11.95
Pawtucket,R.I. N8	11.95
Philadelphia P24	*12.65*
Riverdale,Ill. A4	11.75
Rome,N.Y. R6	11.65
Sharon,Pa. S3	11.65
Trenton,N.J. R5	12.65
Warren,O. B9	11.65
Worcester,Mass. A7	11.95
Worcester,Mass. T6	12.65

NAILS, Stock

	Col.
AlabamaCity,Ala. R2	173
Aliquippa,Pa. J5	173
Atlanta A11	175
Bartonville,Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville,Ind. MS	175
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	178
Jacksonville,Fla. MS	175
Johnstown,Pa. B2	173
Joliet,Ill. A7	173
KansasCity,Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	178
Monessen,Pa. P7	173
Pittsburg,Calif. C11	192
Rankin,Pa. A7	173
S.Chicago,Ill. R2	175
SparrowsPt.,Md. B2	175
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	179

(To Wholesalers; per cwt)

Galveston,Tex. D7	$9.10

NAILS, Cut (100 lb keg)
To Dealers (33)

Conshohocken,Pa. A3	*$10.30*
Wheeling,W.Va. W10	9.80

POLISHED STAPLES

	Col.
AlabamaCity,Ala. R2	175
Aliquippa,Pa. J5	175
Atlanta A11	177
Bartonville,Ill. K4	177
Crawfordsville,Ind. MS	177
Donora,Pa. A7	175
Duluth A7	175
Fairfield,Ala. T2	175
Houston S5	180
Jacksonville,Fla. MS	177
Johnstown,Pa. B2	175
Joliet,Ill. A7	175
KansasCity,Mo. S5	180
Kokomo,Ind. C16	177
Minnequa,Colo. C10	180
Pittsburg,Calif. C11	194
Rankin,Pa. A7	175
S.Chicago,Ill. R2	175
SparrowsPt.,Md. B2	177
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	181

TIE WIRE, Automatic Baler (14½ Ga.)(per 97 lb Net Box)
Coil No. 3150

AlabamaCity,Ala. R2	$10.26
Atlanta A11	10.36
Bartonville,Ill. K4	10.36
Buffalo W12	10.26
Chicago W13	10.26
Crawfordsville,Ind. MS	10.36
Donora,Pa. A7	10.26
Duluth A7	10.26
Fairfield,Ala. T2	10.26
Houston S5	10.51
Jacksonville,Fla. MS	10.36
Johnstown,Pa. B2	10.26
Joliet,Ill. A7	10.26
KansasCity,Mo. S5	10.51
Kokomo,Ind. C16	10.36
LosAngeles B3	11.05
Minnequa,Colo. C10	10.51
Pittsburg,Calif. C11	11.04
S.Chicago,Ill. R2	10.26
S.SanFrancisco C10	11.04
SparrowsPt.,Md. B2	10.36
Sterling,Ill.(3?) N15	10.36

Coil No. 6500 Stand.

AlabamaCity,Ala. R2	$10.60
Atlanta A11	10.70
Bartonville,Ill. K4	10.70
Buffalo W12	10.60
Chicago W13	10.60
Crawfordsville,Ind. MS	10.70
Donora,Pa. A7	10.60
Duluth A7	10.60
Fairfield,Ala. T2	10.60
Houston S5	10.85
Jacksonville,Fla. MS	10.70
Johnstown,Pa. B2	10.60
Joliet,Ill. A7	10.60
KansasCity,Mo. S5	10.85
Kokomo,Ind. C16	10.70
LosAngeles B3	11.40
Minnequa,Colo. C10	10.85
Pittsburg,Calif. C11	11.40
S.Chicago,Ill. R2	10.60
S.SanFrancisco C10	11.40
SparrowsPt.,Md. B2	10.70
Sterling,Ill.(3?) N15	10.70

Coil No. 6500 Interim

AlabamaCity,Ala. R2	$10.65
Atlanta A11	10.75
Bartonville,Ill. K4	10.75
Buffalo W12	10.65
Chicago W13	10.65
Crawfordsville,Ind. MS	10.75
Donora,Pa. A7	10.65
Duluth A7	10.65
Fairfield,Ala. T2	10.65
Houston S5	10.90
Jacksonville,Fla. MS	10.75
Johnstown,Pa. B2	10.65
Joliet,Ill. A7	10.65
KansasCity,Mo. S5	10.90
Kokomo,Ind. C16	10.75
LosAngeles B3	11.45
Minnequa,Colo. C10	10.90
Pittsburg,Calif. C11	11.45
S.Chicago,Ill. R2	10.65
S.SanFrancisco C10	11.45
SparrowsPt.,Md. B2	10.75
Sterling,Ill.(3?) N15	10.75

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	212
Atlanta A11	214
Bartonville,Ill. K4	214
Crawfordsville,Ind. MS	214
Donora,Pa. A7	212
Duluth A7	212
Fairfield,Ala. T2	212
Houston S5	217
Jacksonville,Fla. MS	214
Joliet,Ill. A7	212
KansasCity,Mo. S5	217
Kokomo,Ind. C16	214
Minnequa,Colo. C10	217
Pittsburg,Calif. C11	236
S.SanFrancisco C10	236
SparrowsPt.,Md. B2	214
Sterling,Ill.(7) N15	214

FENCE POSTS

Birmingham C15	172
ChicagoHts.,Ill. C2, I-2	172
Duluth A7	172
Franklin,Pa. F5	172
Huntington,W.Va. C15	172
Johnstown,Pa. B2	172
Marion,O. P11	172
Minnequa,Colo. C10	177
Sterling,Ill.(1) N15	172
Tonawanda,N.Y. B12	172

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	193**
Aliquippa,Pa. J5	190§
Atlanta A11	198*
Bartonville,Ill. K4	198
Crawfordsville,Ind. MS	198
Donora,Pa. A7	193†
Duluth A7	193†
Fairfield,Ala. T2	193†
Houston S5	195**
Jacksonville,Fla. MS	198
Johnstown,Pa. B2	196§
Joliet,Ill. A7	193†
KansasCity,Mo. S5	198**
Kokomo,Ind. C16	195†
Minnequa,Colo. C10	198**
Monessen,Pa. P7	196§
Pittsburg,Calif. C11	213†
Rankin,Pa. A7	193†
S.Chicago,Ill. R2	193**
S.SanFrancisco C10	213*
SparrowsPoint,Md. B2	198§
Sterling,Ill.(7) N15	198††

WOVEN FENCE, 9-15 Ga.

	Col.
Ala.City,Ala. R2	187**
Aliq'ppa,Pa.9-14½ga.J5	190§
Atlanta A11	192*
Bartonville,Ill. K4	192
Crawfordsville,Ind. MS	192
Donora,Pa. A7	187†
Duluth A7	187†
Fairfield,Ala. T2	187†
Houston S5	192**
Jacksonville,Fla. MS	192
Johnstown,Pa.(43) B2	190§
Joliet,Ill. A7	187†
KansasCity,Mo. S5	192**
Kokomo,Ind. C16	189†
Minnequa,Colo. C10	192**
Pittsburg,Calif. C11	210†
Rankin,Pa. A7	187†
S.Chicago,Ill. R2	187**
Sterling,Ill.(7) N15	192††

WIRE (16 gage)	An'ld Stone	Galv. Stone
Ala.City,Ala.R2	17.15	18.70**
Aliq'ppa,Pa. J5	17.15	18.95
Bartonville K4	17.25	19.05
Cleveland A7	17.15	....
Craw'dsville MS	17.25	19.05
Fostoria,O. S1	17.65	19.20†
Houston S5	17.40	18.95**
Jacksonville MS	17.25	19.05
Johnstown B2	17.15	18.95§
Kan.City,Mo. S5	17.40	....
Kokomo C16	17.25	18.80†
Minnequa C10	*18.10*	*19.05***
P'mr r,Mass.W12	18.15	19.70†
Pitts.,Calif. C11	17.50	19.05†
S.SanFran. C10	*18.20*	*19.75***
SparrowsPt. B2	17.25	19.05§
Sterling(37)N15	17.25	19.05††
Waukegan A7	17.15	18.70†
Worcester A7	17.45	....

WIRE, Merchant Quality

(6 to 8 gage)	An'ld Stone	Galv. Stone
Ala.City,Ala. R2	9.00	9.55**
Aliquippa J5	8.65	9.325§
Atlanta(48) A11	8.75	9.425*
Bartonville(48) K4	*9.10*	*9.775*
Buffalo W12	9.00	9.55†
Cleveland A7	*9.00*	....
Crawfordsville MS	8.75	9.425
Donora,Pa. A7	*9.00*	*9.55†*
Duluth A7	*9.00*	*9.55†*
Fairfield T2	*9.00*	*9.55†*
Houston(48) S5	9.25	9.80**
Jacks'ville.Fla. MS	8.75	9.425
Johnstown B2(48)	8.65	9.325§
Joliet,Ill. A7	*9.00*	*9.55†*
Kans.City(48) S5	9.25	9.80**
Kokomo(48) C16	*9.10*	*9.65†*
LosAngeles B3	*9.95*	*10.65§§*
Minnequa C10	*9.25*	*9.8/**§*
Monessen P7(48)	8.65	9.325§
Palmer,Mass. W12	9.30	9.85†
Pitts.,Calif. C11	*9.95*	*10.50†*
Rankin,Pa. A7	*9.00*	*9.55†*
S.Chicago R2	9.00	9.55**
S.SanFran. C10	*9.95*	*10.50****
Spar'wsPt.B2(48)	8.75	9.475§
Sterling(48) N15	*9.25*	*9.925††*
Sterling(1) (48)	*9.15*	*9.825††*
Struthers,O. Y1	9.00	9.65‡
Worcester,Mass.A7	*9.30*	*9.85†*

Based on zinc price of: *13.50, †5c, §10c, ‡Less than 10c, ††10.50c, **Subject to zinc equalization extras.

FASTENERS

(Base discounts, full container quantity, per cent off list, f.o.b. mill)

BOLTS

Carriage, Machine Bolts
Full Size Body (cut thread)

½ in. and smaller:	
6 in. and shorter	49.0
Longer than 6 in.	39.0
⅝ in. thru 1 in.:	
6 in. and shorter	39.0
Longer than 6 in.	35.0
1¼ in. and larger:	
All lengths	35.0

Undersized Body (rolled thread)

½ in. and smaller:	
6 in. and shorter	49.0

Carriage, Machine, Lag Bolts
Hot Galvanized:

½ in. and smaller:	
6 in. and shorter	29.0
Longer than 6 in.	15.0
⅝ in. and larger:	
All lengths	12.0

Lag Bolts (all diam.)

6 in. and shorter	49.0
Longer than 6 in.	39.0

Plow and Tap Bolts

½ in. and smaller by 6 in. and shorter	49.0
Larger than ½ in. or longer than 6 in.	39.0

Blank Bolts 39.0
Step, Elevator, Tire Bolts 49.0
Stove Bolts, Slotted:

⅛ to ¼ in. incl., 3 in. and shorter	55.0
⅝ to ½ in., inclusive	55.0

NUTS

Reg. & Heavy Square Nuts:

All sizes	55.5

Square Nuts, Reg. & Heavy, Hot Galvanized:

All sizes	41.0

Hex Nuts, Reg. & Heavy, Hot Pressed:

¾ in. and smaller	60.5
⅞ in. to 1 in., incl.	55.5
1⅛ in. to 1½ in., incl.	58.5
1⅝ in. and larger	53.5

Hex Nuts, Reg. & Heavy, Cold Punched:

¾ in. and smaller	60.5
⅞ in. to 1½ in., incl.	55.5
1⅝ in. and larger	53.5

Hex Nuts, All Types, Hot Galvanized:

¾ in. and smaller	46.5
⅞ in. to 1 in., incl.	41.5
1⅛ in. to 1½ in., incl.	46.5

Hex Nuts, Semifinished, Heavy (Incl. Slotted):

¾ in. and smaller	60.5
⅞ in. to 1½ in., incl.	55.5
1⅝ in. and larger	53.5

Hex Nuts, Flinshed (Incl. Slotted and Castellated):

1 in. and smaller	63.0
1⅛ in. to 1½ in., incl.	59.0
1⅝ in. and larger	53.5

Semifinished Hex Nuts, Reg. (Incl. Slotted):

¾ in. and smaller	60.5
⅞ in. to 1 in., incl.	63.0
1⅛ to 1½ in., incl.	59.0
1⅝ in. and larger	53.5

CAP AND SETSCREWS
(Base discounts, packages, per cent off list, f.o.b. mill)

Hex Head Capscrews, Coarse or Fine Thread, Bright:
6 in. and shorter:

⅜ in. and smaller	40.0
¾, ⅞, and 1 in. diam.	22.0
Longer than 6 in.:	
⅜ in. and smaller	8.0
¾, ⅞, and 1 in. diam.	+ 6.0

High Carbon, Heat Treated:
6 in. and shorter:

⅜ in. and smaller	26.0
¾, ⅞, and 1 in. diam.	3.0
Longer than 6 in.:	
⅜ in. and smaller	+ 13.0
¾, ⅞, and 1 in. diam.	+ 32.0

Flat Head Capscrews:

¾ in. and smaller	+ 76.0

Setscrews, Square Head, Cup Point, Coarse Thread:
Through 1 in. diam.:

6 in. and shorter	Net
Longer than 6 in.	+ 23

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.
Structural ½ in., larger 12.25
⅞ in. under: List less 19%

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	25.98	23.54
1¼	13	....	30.78	23.36
1½	13	29.03	34.01	25.83
1¾	13	34.29	40.18	30.51
2	13	38.44	45.05	34.20
2¼	13	43.29	50.75	38.52
2½	12	46.99	55.06	41.81
2¾	12	51.76	60.65	46.05
3	12	56.04	65.67	49.88
3½	12	59.76	70.03	53.19

RAILWAY MATERIALS

Rails	Standard No. 1	Standard No. 2	Tee Rails All No. 2	Tee Rails 60-lb Under
Bessemer,Pa. U5	5.525	5.425	....	6.50
Ensley,Ala. T2	5.525	5.425	....	6.50
Fairfield,Ala. T2	....	....	....	6.50
Gary,Ind. U5	5.525	5.425	....	....
Huntington,W.Va. C15	....	....	....	6.50
Indiana Harbor,Ind. I-2	5.525	5.425	5.475	....
Johnstown,Pa. B2	....	....	....	(16)6.50
Lackawanna,N.Y. B2	5.525	5.425	....	6.50
Minnequa,Colo. C10	5.525	5.425	....	7.00
Steelton,Pa. B2	5.525	5.425	....	....
Williamsport,Pa. S19	....	....	....	6.50

TIE PLATES

Fairfield,Ala. T2	6.60
Gary,Ind. U5	6.60
Ind.Harbor,Ind. I-2	6.60
Lackawanna,N.Y. B2	6.60
Minnequa,Colo. C10	6.60
Seattle B3	6.75
Steelton,Pa. B2	6.60
Torrance,Calif. C11	6.75

JOINT BARS

Bessemer,Pa. U5	6.975
Fairfield,Ala. T2	6.975
Ind.Harbor,Ind. I-2	6.975
Joliet,Ill. U5	6.975
Lackawanna,N.Y. B2	6.975
Minnequa,Colo. C10	6.975
Steelton,Pa. B2	6.975

AXLES

Ind.Harbor,Ind. S13	9.125
Johnstown,Pa. B2	9.125

TRACK BOLTS, Untreated

Cleveland R2	14.75
KansasCity,Mo. S5	*15.35*
Lebanon,Pa. B2	*15.35*
Minnequa,Colo. C10	14.75
Pittsburgh P14	14.75
Seattle B3	*15.85*

SCREW SPIKES

Lebanon,Pa. B2	*15.10*

STANDARD TRACK SPIKES

Fairfield,Ala. T2	9.75
Ind Harbor,Ind. I-2, Y1	10.10
KansasCity,Mo. S5	10.10
Lebanon,Pa. B2	9.75
Minnequa,Colo. C10	9.75
Pittsburgh J5	10.10
Seattle B3	*10.60*
S.Chicago,Ill. R2	10.10
Struthers,O. Y1	10.10
Youngstown R2	10.10

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Marchant.
(4) Reinforcing.
(5) 1⅛ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 8 in., inclusive, 7.05c.
(6) Chicago or Birm. Base.
(7) Chicago base 2 cols. lower.
(8) 16 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅜" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(21) New Haven,Conn. base.
(22) Deld. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.10c, finer than 15 Ga.
(25) Bar mill bands.
(26) Deld. in mill zone, 6.295c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.875c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld in mill zone or within switching limits, 5.685c.
(43) 9-14½ Ga.
(44) To fabricators.
(48) 6-7 Ga.
(49) 3½ in. and smaller rounds; 9.65c, over 3½ in. and other shapes.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25
Ambridge, Pa. N2	+12.25	....	+5.75	....	+3.25	....	+1.75	....	+1.75	....	+2	....	0.5	....
Lorain, O. N3	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25
Youngstown Y1	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25

ELECTRICWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		8c		8c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Alton, Ill. L1	....	....	....	....	....	....	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Benwood, W. Va. W10	1.5	+25	+10.5	+34	+21	+42.5	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Butler, Pa. F6	4.5	+22	+8.5	+32	+19.5	+41	....	....	....	....	....	....	....	....
Etna, Pa. N2	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Fairless, Pa. N3	....	....	....	....	....	....	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Fontana, Calif. K1	....	....	....	....	....	....	+10.75	+26	+7.75	+22	+4.25	+17.5	+1.75	+16.75
Indiana Harbor, Ind. Y1	....	....	....	....	....	....	1.25	+14	4.25	+10	7.75	+5.5	10.25	+6.25
Lorain, O. N3	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Sharon, Pa. S4	4.5	+22	+8.5	+32	+19.5	+41	....	....	....	....	....	....	....	....
Sharon, Pa. M6	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Sparrows Pt., Md. B2	0.5	+26	+11.5	+35	+22	+43.5	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Wheatland, Pa. W9	4.5	+22	+8.5	+32	+19.5	+41	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Youngstown R2, Y1	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75

Size—Inches	1¼		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.73		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	....	....	....	....
Alton, Ill. L1	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Benwood, W. Va. W10	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Etna, Pa. N2	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Fairless, Pa. N3	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Fontana, Calif. K1	+1.25	+15.75	+0.75	+15.25	0.75	+15.5	0.75	+15.5	+9.75	+26.5	+9.75	+26.5
Indiana Harbor, Ind. Y1	10.75	+3.75	11.25	+3.25	12.75	+3.5	12.25	+3.5	2.25	+14.5	2.25	+14.5
Lorain, O. N3	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	....	....	....	....
Sharon, Pa. M6	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	....	....	....	....
Sparrows Pt., Md. B2	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Wheatland, Pa. W9	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Youngstown R2, Y1	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5

*Galvanized pipe discounts based on current price of zinc (10.00¢ East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	—Rerolling— Ingot	Slabs	Forging Billets	H.R. Strip	H.R. Rods; C.F. Wire	Bars; Structural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
201	22.00	27.00	....	36.00	40.00	42.00	39.25	48.50	45.00
202	23.75	30.25	36.50	39.00	40.75	43.00	40.00	49.25	49.25
301	23.25	28.00	37.25	37.25	42.00	44.25	41.25	51.25	47.50
302	25.25	31.50	38.00	40.50	42.75	45.00	42.25	52.00	52.00
302B	25.50	32.75	40.75	45.75	45.00	47.25	44.50	57.00	57.00
303	....	32.00	41.00	46.00	45.50	48.00	45.00	56.75	56.75
304	27.00	33.25	40.50	44.25	45.25	47.75	45.75	55.00	55.00
304L	....	....	48.25	51.50[a]	53.00	55.50	53.50	63.25	63.25
305	28.50	36.75	42.50	47.50	45.25	47.75[a]	46.25	58.75	58.75
308	30.75	38.25	47.25	50.25	52.75	55.75	55.25	63.00	63.00
309	39.75	49.50	57.75	64.50	63.75	67.00	66.00	80.50	80.50
310	49.75	61.50	78.00	84.25	86.50	91.00	87.75	96.75	96.75
314	....	....	77.50	....	86.50	91.00	87.75	99.00	104.25
316	39.75	49.50	62.25	69.25	69.25	73.00	71.75	80.75	80.75
316L	....	55.50	70.00	76.50	77.00	80.75	79.50	89.25	89.25
317	48.00	60.00	76.75	88.25	86.25	90.75	88.50	101.00	101.00
321	32.25	40.00	47.00	53.50	52.50	55.50	54.75	65.50	65.50
330	....	....	118.75	....	132.00	138.50	135.50	149.25	149.25
18-8 CbTa	37.00	46.50	55.75	63.50	61.50	64.75	34.75	79.25	79.25
403	....	....	28.25	....	32.00	33.75	30.00	40.25	40.25
405	19.50	25.50	29.75	36.00	33.50	35.25	32.50	46.75	46.75
410	16.75	21.50	28.25	31.00	32.00	33.75	30.00	40.25	40.25
416	....	....	28.75	....	32.50	34.25	31.25	48.25	48.25
420	26.00	33.50	34.25	41.75	39.25	41.25	40.25	62.00	62.00
430	17.00	21.75	28.75	32.00	32.50	34.25	31.00	40.75	40.75
430F	....	....	29.50	....	33.00	34.75	31.75	51.75	51.75
431	....	28.75	37.75	....	42.00	44.25	41.00	56.00	56.00
446	....	....	39.25	59.00	44.25	46.50	42.75	70.00	70.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Carpenter Steel Co. of New England; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Stainless & Strip Div., Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside Alloy Metal Div., H. K. Porter Company Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel Div., Copperweld Steel Co.; Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulbrich Stainless Steels Inc.; U. S. Steel Corp.; Universal-Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel Co., subsidiary of Allegheny Ludlum Steel Corp.; Washington Steel Corp.

Clad Steel

	Plates 5%	Plates Carbon Base 10%	Plates Carbon Base 15%	Sheets Carbon Base 20%	Sheets Carbon Base 20%
Stainless					
302	....	....	....	....	37.50
304	26.05	28.80	31.55	34.30	39.75
304L	30.50	33.75	36.95	40.15	....
316	38.20	42.20	46.25	50.25	58.25
316L	42.30	46.75	51.20	55.65	....
316 Cb	49.90	55.15	60.40	65.65	....
321	31.20	34.50	37.75	41.05	47.25
347	36.90	40.80	44.65	48.55	57.00
405	22.25	24.60	26.90	29.25	....
410	20.55	22.70	24.85	27.00	....
430	21.20	23.45	25.65	27.90	....
Inconel	48.90	59.55	70.15	80.85	....
Nickel	41.65	51.95	62.30	72.70	....
Nickel, Low Carbon	41.95	52.60	63.30	74.15	....
Monel	43.35	53.55	63.80	74.05	....

	Strip, Carbon Base —Cold Rolled— 10%	Both Sides
Copper*	34.75	40.65

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Reg. Carbon (W-1)	0.330	W-Cr Hot Work (H-12)	0.530
Spec. Carbon (W-1)	0.385	V-Cr Hot Work (H-13)	0.550
Oil Hardening (O-1)	0.505	W Hot Wk. (H-21)	1.425-1.44
V-Cr-Hot Work (H-11)	0.505	Hi-Carbon-Cr (D-11)	0.955

Grade by Analysis (%) W	Cr	V	Co	Mo	AISI Designation	$ per lb
18	4	1	....	....	T-1	1.840
18	4	2	....	....	T-2	2.005
13.5	4	3	....	....	T-3	2.105
18.25	4.25	1	4.75	....	T-4	2.545
18	4	2	9	....	T-5	2.915
20.25	4.25	1.6	12.25	....	T-6	4.330
13.75	3.75	2	5	....	T-8	2.485
1.5	4	1	....	8.5	M-1	1.200
6.4	4.5	1.9	....	5	M-2	1.345
6	4	3	....	6	M-3	1.590

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
Birmingham R2	62.00	62.50‡	....	....
Birmingham U6	....	62.50‡	66.50	....
Woodward,Ala. W15	62.00**	62.50‡	66.50	....
Cincinnati, deld.	....	70.20	....	....
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N.Tonawanda,N.Y. T9	....	66.50	67.00	67.50
Tonawanda,N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	....
Rochester,N.Y., deld.	69.02	69.52	70.02	....
Syracuse,N.Y., deld.	70.12	70.62	71.12	....
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S.Chicago,Ill. W14	66.00	66.50	66.50	67.00
S.Chicago,Ill. W14	66.00	....	66.50	67.00
Milwaukee, deld.	69.02	69.52	69.52	70.02
Muskegon,Mich., deld.	....	74.52	74.52	....
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron,Ohio, deld.	69.52	70.02	70.02	70.52
Mid-Atlantic District				
Birdsboro,Pa. B10	68.00	68.50	69.00	69.50
Chester,Pa. P4	68.00	68.50	69.00	....
Swedeland,Pa. A3	68.00	68.50	69.00	69.50
New York, deld.	....	75.50	76.00	....
Newark,N.J., deld.	72.69	73.19	73.69	74.19
Philadelphia, deld.	70.41	70.91	71.41	71.99
Troy,N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
NevilleIsland,Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48
McKeesRocks,Pa., deld.	....	67.60	67.60	68.13
Lawrenceville,Homestead, Wilmerding,Monaca,Pa., deld.	....	68.26	68.26	68.79
Verona,Trafford,Pa., deld.	68.29	68.82	68.82	69.35
Brackenridge,Pa., deld.	68.60	69.10	69.10	69.63
Midland,Pa. C18	66.00	....	....	....
Youngstown District				
Hubbard,Ohio Y1	....	....	66.50	....
Sharpsville,Pa. S6	66.00	....	66.50	67.00
Youngstown Y1	....	....	66.50	67.00
Mansfield,Ohio, deld.	71.30	....	71.80	72.30

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Duluth I-3	66.00	66.50	66.50	67.00
Erie,Pa. I-3	66.00	66.50	66.50	67.00
Everett,Mass. E1	67.50	68.00	68.50	....
Fontana,Calif. K1	75.00	75.50	....	....
Geneva,Utah C11	66.00	66.50	....	....
GraniteCity,Ill. G4	67.90	68.40	68.90	....
Ironton,Utah C11	66.00	66.50	....	....
Minnequa,Colo. C10	68.00	68.50	69.00	....
Rockwood,Tenn. T3	....	62.50‡	66.50	....
Toledo,Ohio I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.94	73.44	....	....

**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.
‡Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.
Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% and $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson,Ohio I-3, J1	$78.00
Buffalo H1	79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)	
CalvertCity,Ky. P15	$99.00
NiagaraFalls,N.Y. P15	99.00
Keokuk,Iowa Open-hearth & Fdry. $9 freight allowed K2	103.50
Keokuk,Iowa O.H. & Fdry. 12½ lb piglets, 16% Si, max fr'gt allowed up to $9, K2	106.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$78.50
Rockwood,Tenn. T3 (Phos. 0.035% max)	78.50
Troy,N.Y. R2 (Phos. 0.035% max)	73.00
Philadelphia, deld.	81.67
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
NevilleIsland,Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00

Steel Service Center Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Denver, Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Birmingham, Chattanooga, Houston, Seattle, no charge.

	SHEETS				STRIP	BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Gal. 10 Ga.†	Stainless Type 302	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††[5]		Carbon	Floor
Atlanta	8.59§	9.86§	..	....	8.64	9.01	10.68	....	9.05	8.97	10.90
Baltimore	8.00	8.90	10.32	....	8.70	8.65	12.33#	15.18	8.50	8.65	9.75
Birmingham	8.18	9.45	10.46	....	8.23	8.60	10.57	....	8.64	8.56	10.70
Boston	9.38	10.44	11.45	53.50	9.42	9.73	12.90#	15.28	9.63	9.72	11.20
Buffalo	8.25	9.00	11.07	55.98	8.50	8.80	11.00#	15.00	8.90	8.90	10.45
Chattanooga	8.35	9.69	9.65	....	8.40	8.77	10.46	....	8.88	8.80	10.66
Chicago	8.20	9.45	10.10	53.00	8.23	8.60	8.80	14.65	8.64	8.56	9.88
Cincinnati	8.34	9.48	10.10	52.43	8.54	8.92	11.06	14.86	9.18	8.93	10.21
Cleveland	8.18	9.45	10.20	52.33	8.33	8.69	10.80#	14.74	9.01	8.79	10.11
Dallas	7.50	8.80	....	....	7.65	7.60	11.01	....	7.65	8.10	9.35
Denver	9.40	11.84	12.94	....	9.43	9.80	11.19	....	9.84	9.76	11.08
Detroit	8.43	9.70	10.45	56.50	8.58	8.90	9.15	14.91	9.18	8.91	10.13
Erie, Pa.	8.20	9.45	9.95[10]	....	8.50	8.75	9.05[10]	....	9.00	8.85	10.10
Houston	8.40	8.90	10.29	52.00	8.45	8.40	11.25	15.75	8.35	8.75	10.10
Jackson, Miss.	8.52	9.79	....	....	8.57	8.94	10.68	....	8.97	8.90	10.74
Los Angeles	8.25[2]	10.30[2]	11.90[2]	57.60	8.90	8.70[2]	12.10[2]	16.10	8.50[2]	8.65[2]	10.80[2]
Memphis, Tenn.	8.55	9.80	....	....	8.60	8.97	11.96#	....	9.01	8.93	10.56
Milwaukee	8.33	9.58	10.23	....	8.36	8.73	9.03	14.78	8.85	8.69	10.01
Moline, Ill.	8.55	9.80	10.45	....	8.58	8.95	9.15	....	8.99	8.91	....
New York	8.87	10.13	10.56	53.08	9.31	9.57	12.76#	15.09	9.35	9.43	10.66
Norfolk, Va.	8.40	....	....	....	9.10	9.10	12.00	....	9.40	8.85	10.35
Philadelphia	8.00	9.25	10.32	52.69	8.70	8.65	11.95#	15.48	8.50	8.75	9.75**
Pittsburgh	8.18	9.45	10.45	52.00	8.33	8.60	10.80#	14.65	8.64	8.56	9.88
Portland, Oreg.	8.50	11.20	11.55	57.38	9.55	8.65	14.50	15.95	8.65	8.30	11.50
Richmond, Va.	8.40	....	10.40	....	9.10	9.00	....	....	9.40	8.85	10.35
St. Louis	8.54	9.79	10.36	....	8.59	8.97	9.41	15.01	9.10	8.93	10.25
St. Paul	8.79	10.04	10.71	....	8.84	9.21	9.66	....	9.38	9.30	10.49
San Francisco	9.35	10.75	11.00	55.10	9.45‡‡	9.70	13.00	16.00	9.50	9.60	12.00
Seattle	9.95	11.15	12.20	57.38	10.00	10.10	14.05	16.35	9.80	9.70	12.10
South'ton, Conn.	9.07	10.33	10.71	....	9.48	9.74	....	....	9.57	9.57	10.91
Spokane	9.95	11.15	12.20	57.38	10.00	10.10	14.05	16.35	9.80	9.70	12.10
Washington	8.88	....	....	....	9.36	9.56	10.94	....	9.79	9.26	10.74

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **⅛ in. and heavier; ††as annealed; ‡‡¾ in. to 4 in. wide, inclusive; #1 in. round C-1018.

Base quantities, 2000 to 4999 lb except as noted; cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, Portland, Oreg. 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Portland, Oreg., 1000 to 9999 lb; [2]—30,000 lb; [5]—1000 to 1999 lb; [10]—2000 lb and over.

Refractories

Fire Clay Brick (per 1000)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchens, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Winburne, Snow Shoe, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parrall, Portsmouth, Ohio, Ottawa, Ill., Stevens Pottery, Ga., $140; Salina, Pa., $145; Niles, Ohio, $138; Cutler, Utah, $165.

Super-Duty: Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St. Louis, $185; Stevens Pottery, Ga., $195; Cutler, Utah, $233.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, Ohio, Hawstone, Pa., $158; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., $163; E. Chicago, Ind., Joliet, Rockdale, Ill., $168; Lehigh, Utah, $175; Los Angeles, $180.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., $157; Morrisville, Hays, Latrobe, Pa., $168; E. Chicago, Ind., $167; Curtner, Calif., $182.

Semisilica Brick (per 1000)

Clearfield, Pa., $140; Philadelphia, $137; Woodbridge, N. J., $135.

Ladle Brick (per 1000)

Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, $96.75; Clearfield, Pa., Portsmouth, Ohio, $102.

High-Alumina Brick (per 1000)

50 Per Cent: St. Louis, Mexico, Vandalia, Mo., $235; Danville, Ill., $253; Philadelphia, Clearfield, Pa., $2[illegible]; Orviston, Snow Shoe, Pa., $260.

60 Per Cent: St. Louis, Mexico, Vandalia, Mo., $295; Danville, Ill., $313; Clearfield, Orviston, Snow Shoe, Pa., $320; Philadelphia, $310.

70 Per Cent: St. Louis, Mexico, Vandalia, Mo., $335; Danville, Ill., $353; Clearfield, Orviston, Snow Shoe, Pa., $360; Philadelphia, $350.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $188.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $310.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $234.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Narlo, Ohio, $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.60.

Magnesite (per net ton)

Domestic, dead-burned, ½ in. grains with fines: Chewelah, Wash., Luning, Nev., $46. ⅜ in. grains with fines: Baltimore, $73.

Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $37-$41; 70%, $36-$40; 60%, $33-$36.50. Imported, net tons, f.o.b. cars point of entry, duty paid, metallurgical grade: European, $29-$31, contract; Mexican, all rail, duty paid, $2[illegible] barge, Brownsville, Tex., $26.

Ores

Lake Superior Iron Ore

(Prices effective for the 1958 shipping season, gross ton, 51.50% iron natural, rail or vessel, lower lake ports.)

Mesabi bessemer	$11.60
Mesabi nonbessemer	11.45
Old Range bessemer	11.85
Old Range nonbessemer	11.70
Open-hearth lump	12.70
High phos	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 30, 195[illegible], and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, foundry and basic 62-64% concentrates	18.00-19.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65%	25.00
N. African hematite (spot)	nom
Brazilian iron ore, 68.5%	17.60

Tungsten Ore

Net ton, unit

Foreign wolframite, good commercial quality	$9.50-10.00
Domestic, concentrates f.o.b. milling points	17.00-22.00

*Before duty.

Manganese Ore

Mn 46-48%, Indian (export tax included) $1.10 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; other than Indian, nominal; contracts by negotiation.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian

48% 3:1	$42.00-44.00
48% 2.8:1	38.00-40.00
48% no ratio	29.00-31.00

South African Transvaal

48% no ratio	$29.00-31.00
44% no ratio	22.00-23.00

Turkish

48% 3:1	$51.00-55.00

Domestic

Rail nearest seller

48% 3:1	39.00

Molybdenum

Sulfide concentrate, per lb of Mo content, mines, unpacked	$1.23

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard

50-55%	$2.25-2.40
60-65%	2.50-3.10

Vanadium Ore

Cents per lb V.O.

Domestic	31.00

Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

	Cents
Sponge Iron, Swedish: deld. east of Mississippi River, ocean bags 23,000 lb and over.. F.o.b. Riverton or Camden, N. J., west of Mississippi River	10.50 9.50
Sponge Iron, Domestic, 98 + % Fe: Deld. east of Mississippi River, 23,000 lb and over	10.50
Electrolytic Iron: Melting stock, 99.9% Fe, irregular fragments of ⅛ in. x 1.3 in.	28.00
Annealed, 99.5% Fe..	36.50
Unannealed (99 + % Fe)	36.00
Unannealed (99 + % Fe) (minus 325 mesh)	59.00
Powder Flakes (minus 16, plus 100 mesh)	29.00
Carbonyl Iron: 98.1-99.9%, 3 to 20 microns, depending on grade, 93.00-290.00 in standard 200-lb containers; all minus 200 mesh.	

Aluminum: Atomized, 500-lb drum, freight allowed: Carlots	39.50
Ton lots	41.50
Antimony, 500-lb lots	42.00*
Brass, 5000-lb lots	31.00-46.70†
Bronze, 5000-lb lots	47.20-51.50†
Copper: Electrolytic	14.75*
Reduced	14.75*
Lead	7.50*
Manganese: Minus 35 mesh	64.00
Minus 100 mesh	70.00
Minus 200 mesh	75.00
Nickel, unannealed	74.00
Nickel-Silver, 5000-lb lots	48.80-53.50†
Phosphor-Copper, 5000-lb lots	59.30†
Copper (atomized) 5000-lb lots	39.80-48.30†
Silicon	47.50
Solder	7.00*
Stainless Steel, 304	$1.07
Stainless Steel, 316	$1.26
Tin	14.50*
Zinc, 5000-lb lots	17.50-30.70†
Tungsten:	Dollars
Melting grade, 99% 60 to 200 mesh, nominal; 1000 lb and over	3.15
Less than 1000 lb	3.30
Chromium, electrolytic 99.8% Cr min metallic basis	5.00

*Plus cost of metal. †Depending on composition. ‡Depending on mesh.

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE

Inches Diam	Length	Per 100 lb
2	24	$60.75
2½	30	39.25
3	40	37.00
4	40	35.00
5⅛	40	34.75
6	60	31.50
7	60	28.25
8, 9, 10	60	28.00
12	72	26.75
14	60	26.75
16	72	25.75
17	60	26.25
18	72	26.25
20	72	25.25
24	84	26.00

CARBON

8	60	13.30
10	60	13.00
12	60	12.95
14	60	12.85
14	72	11.95
17	60	11.85
18	72	11.40
20	84	11.40
20	90	11.00
24	72, 84	11.25
24	96	10.95
30	84	11.05
40, 35	110	10.70
40	100	10.70

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, Pa., furnace	$14.75-15.75
Connellsville, Pa., foundry	18.00-18.50

Oven Foundry Coke

Birmingham, ovens	$28.85
Cincinnati, deld.	31.84
Buffalo, ovens	30.50
Camden, N. J., ovens	29.50
Detroit, ovens	30.50
Pontiac, Mich., deld.	32.45
Saginaw, Mich., deld.	34.03
Erie, Pa., ovens	30.50
Everett, Mass., ovens: New England, deld.	31.55*
Indianapolis, ovens	29.75
Ironton, Ohio, ovens	29.00
Cincinnati, deld.	31.84
Kearny, N. J., ovens	29.75
Milwaukee, ovens	30.50
Neville Island (Pittsburgh), Pa., ovens	29.25
Painesville, Ohio, ovens	30.50
Cleveland, deld.	32.69
Philadelphia, ovens	29.50
St. Louis, ovens	31.50
St. Paul, ovens	29.75
Chicago, deld.	33.29
Swedeland, Pa., ovens	29.50
Terre Haute, Ind., ovens	29.75

*Or within $5.15 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzene	36.00
Toluene, one deg	29.50
Industrial xylene	32.00-34.00

Per ton, bulk, ovens

Ammonium sulfate	$32.00-34.00

Cents per pound, producing point

Phenol: Grade 1, 17.50; Grade 2-3, 15.50; Grade 4, 17.50; Grade 5, 16.50; Grade 6, 14.50.

Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries.)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305	$5.30	$5.30	$5.30	$5.50
Bar Size Angles	5.05	5.05	5.05	5.42
Structural Angles	5.05	5.05	5.05	5.42
I-Beams	5.11	5.11	5.11	5.45
Channels	5.11	5.11	5.11	5.45
Plates (basic bessemer)	6.62	6.62	6.62	6.94
Sheets, H.R.	8.20	8.20	8.20	8.50
Sheets, C.R. (drawing quality)	8.75	8.75	8.75	9.12
Furring Channels, C.R., 1000 ft, ¾ x 0.30 lb per ft	25.71	25.59	25.59	26.46
Barbed Wire (‡)	6.65	6.65	6.65	7.00
Merchant Bars	6.07	6.07	6.07	6.43
Hot-Rolled Bands	7.15	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5	6.50	6.50	6.50	6.90
Wire Rods, O.H. Cold Heading Quality No. 5	7.07	7.07	7.07	7.47
Bright Common Wire Nails (§)	8.02	8.02	7.92	8.20

‡Per 82 lb net reel. §Per 100-lb kegs, 20d nails and heavier.

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton, Palmerton, Neville Island, Pa. 21-23% Mn, $105; 19-21% Mn, 1-3% Si, $102.50; 16-19% Mn, $100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx) base price per net ton, $245, Johnstown, Duquesne, Sheridan, Neville Island, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively. (Mn 79-81%). Lump $253 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-90%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c, Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.5% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn, packed, carload 26.8c, ton lot 28.4c, less ton 29.6c. Delivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2%). Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot, 47.25c; less ton lot 49.25c. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carload, 34c; 2000 *lb to min* carload, 36c; less ton, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Carload, lump, bulk 1.50% C grade, 18-20% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 15-17%, deduct 0.2% from above prices. For 3% C grade, Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract c.l. $240 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis. Spot, $245.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4%). Contract c.l. $290 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed. Spot, $295.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l. lump, bulk 28.75c per lb of contained Cr; c.l. packed 30.30c, ton lot 32.05c; less ton 33.45c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Ton lot, add 3.5c; less ton, add 5.2c. Delivered.

Cr 67-71%, carload, lump, bulk, C 0.02% max, 41.00c per lb contained Cr; 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max, 38.25c; 0.50% max, 38.00c; 1.0% max, 37.75c; 1.5% max, 37.50c; 2.0% max, 37.25c. Ton lot, add 3.4c; less ton lot, add 5.1c. Delivered.

Foundry Ferrochrome, High-Carbon: (Cr 61-66%, C 5-7%, Si 7-10%). Contract, c.l., 2 in. x D, bulk 30.05c per lb of contained Cr. Packed, c.l. 31.65c, ton 33.45c, less ton 34.95c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload packed, SM x D, 21.25c per lb of alloy; ton lot 22.50c; less ton lot 23.70c. Delivered. Spot, add 0.25c.

Ferrochrome-Silicon: Cr 39-41%, Si 42-45%, C 0.05% max or Cr 33-36%, Si 45-48%, C 0.05% max. Carload, lump, bulk, 3" x down and 2" x down, 27.50c per lb contained Cr, 14.20c per lb contained Si. 0.75" x down, 28.65c per lb contained Cr, 14.20c per lb contained Si. Delivered.

Chromium Metal, Electrolytic: Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed 2" x D plate (about 2½" thick) $1.29 per lb, ton lot $1.31, less ton lot $1.33. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth grade (V 50-55%, Si 5% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) $3.30. **High Speed Grade:** (V 50-55%, or 70-75%, Si 1.50% max, C 0.20% max) $3.40.

Grainal: Vanadium Grainal No. 1 $1.05 per lb; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract less carload lot, packed, $1.38 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

50% Ferrosilicon: Contract, carload, lump, bulk, 14.20c per lb of contained Si. Packed c.l. 16.70c, ton lot 18.15c, less ton 19.80c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 15.25c per lb contained silicon. Packed, c.l. 17.25c, ton lot 19.05c, less ton 20.4c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 16.4c per lb of contained Si. Packed, c.l. 18.30c, ton lot 19.95c, less ton 21.2c Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 19.5c per lb of contained Si. Packed, c.l. 21.15c, ton lot 22.55c, less ton 23.6c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 1.00% max Fe, 0.07% max Ca), C.l. lump, bulk, 21.00c per lb of Si. Packed, c.l. 22.65c, ton lot 23.95c, less ton 24.95c. Add 0.5c for max 0.03% Ca grade. Add 0.5c for 0.50% Fe grade analyzing min 98.25% min Si.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.60c per lb of alloy; ton lot, packed, 10.95c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk, 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 27.25c per lb of alloy, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

Carbortam: (B 1 to 2%). Contract, lump, carload $320 per ton, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Contract, carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx 3¾ lb each and containing 2 lb of Cr). Contract, carload, bulk 19.60c per lb of briquet, carload packed in box pallets 19.80c, in bags 20.70c; 3000 lb to c.l. in box pallets 21.00c; 2000 lb to c.l. in bags 21.90c; less than 2000 lb in bags 22.80c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Contract, carload, bulk 14.8c per lb of briquet; c.l., packed, pallets 15c, bags 16c; 3000 lb to c.l., pallets 16.2c; 2000 lb to c.l., bags, 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3½ lb and containing 2 lb of Mn and approx ½ lb of Si). Contract, c.l. bulk 15.1c per lb of briquet; c.l. packed, pallets, 15.3c; bags 16.3c, 3000 lb to c.l., pallets, 16.5c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si). Contract, carload, bulk 7.7c per lb of briquet; packed, pallets, 7.9c; bags 8.9c; 3000 lb to c.l., pallets 9.5c; 2000 lb to c.l., bags 10.5c; less ton 11.4c. Delivered. Spot, add 0.25c. (Small size—weighing approx 2½ lb and containing 1 lb of Si). Carload, bulk 7.8c. Packed, pallets 8.05c; bags 9.05c; 3000 lb to c.l., pallets 9.65c; 2000 lb to c.l., bags, 10.65c; less ton 11.55c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each). $1.41 per lb of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 5000 lb W or more $2.15 per lb (nominal) of contained W. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.4% max). Ton lots 2" x D, $4 per lb of contained Cb; less ton lots, $4.05 (nominal). Delivered.

Ferrotantalum Columbium: (Cb 40% approx, Ta 20% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lot 2" x D, $3.80 per lb of contained Cb plus Ta, delivered; less ton lot $3.85 (nominal).

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, c.l. packed ½-in. x 12 M 20.00c per lb of alloy, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 20c per lb of alloy, ton lot 21.15c; less ton lot 22.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

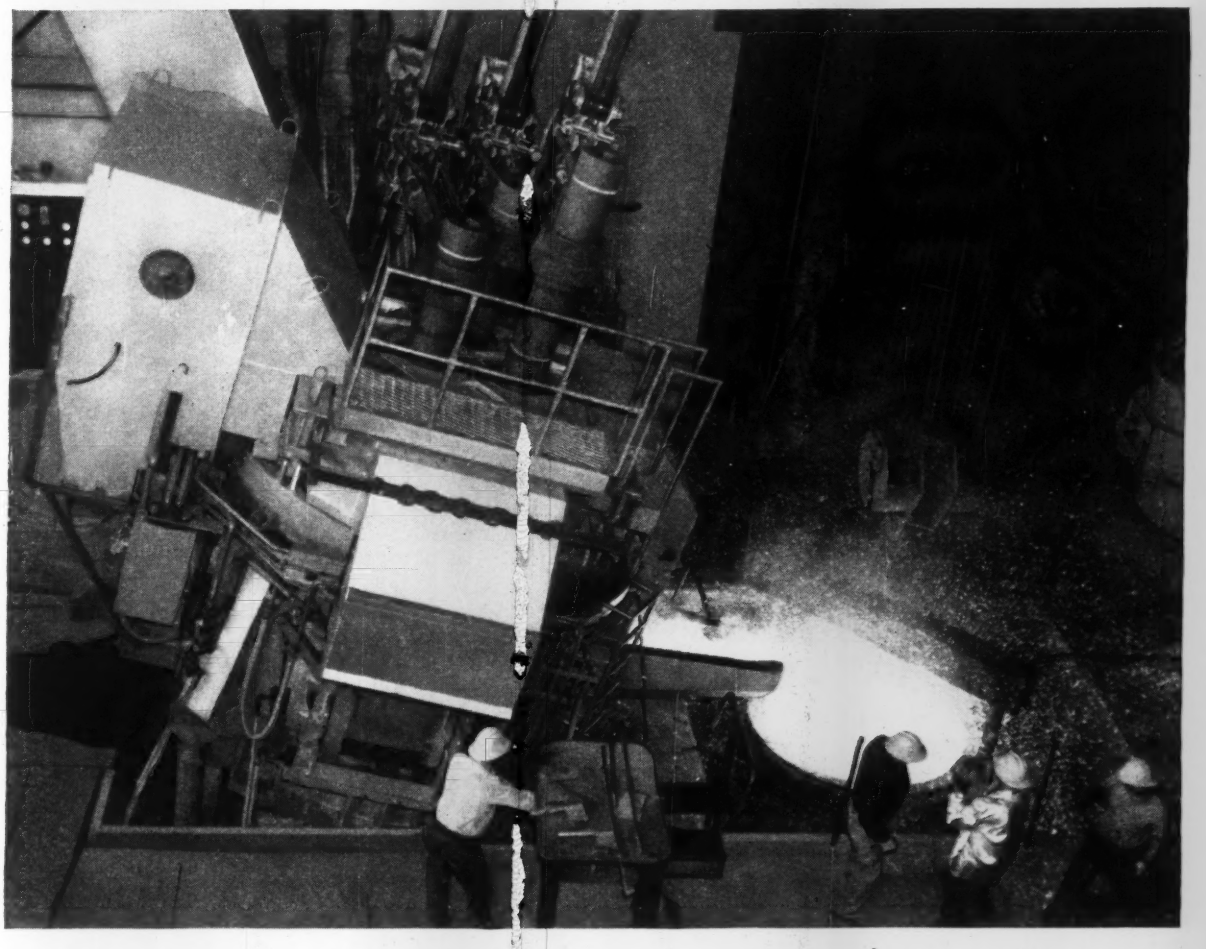
V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.45c per lb of alloy; ton lot 19.95c; less ton lot 21.20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal Fe). Lump, carload, bulk 19.25c. Packed c.l. 20.25c, 2000 lb to c.l. 21.25c; less than 2000 lb 21.75c per lb of alloy. Delivered.

Ferrophosphorous: (23-25% based on 24% P content with unitage of $5 for each 1% of P above or below the base); carload, bulk, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $120 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo, in 200-lb container, f.o.b. Langeloth and Washington, Pa. $1.68 in all sizes except powdered which is $1.74.

Technical Molybdic-Oxide: Per lb of contained Mo, in cans, $1.39; in bags, $1.38, f.o.b. Langeloth and Washington, Pa.



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Scrap Prices Inch Upward

Stronger situation develops in East on light buying by mills. STEEL's composite on No. 1 heavy melting up 34 cents to $41.67. Auto strike uncertainty restrains traders

Scrap Prices, Page 106

Philadelphia — Delivered prices on small purchases of several grades of steel scrap have been advanced. Sellers could dispose of larger tonnages, but are inclined to hold off until after Labor Day in anticipation of higher steelmaking operations and a still stronger market.

No. 1 heavy melting steel, No. 1 bundles, and No. 1 bushelings are higher at $39 and No. 2 heavy melting at $35, delivered. Electric furnace bundles are stronger at a flat $40, delivered; heavy turnings at $34; and low phos structurals and plates at $42-$44. Mixed borings and turnings are nominally higher at $20-$21.

Little material is being exported from Philadelphia.

New York — While demand is quiet, supplies are coming out rather slowly. Brokers must pay firm prices on steel grades. Prices are higher on: Unstripped motor blocks ($28-$29), 18-8 stainless borings and turnings ($65-$70), and 430 stainless sheets, clips, and solids ($65-$70).

Contributing to the strong undertone are prospects for higher steelmaking operations in September and increased loadings for export.

The World War II aircraft carrier *USS Enterprise* is being scrapped by Lipsett Inc., New York, at Kearny, N. J. The ship is expected to yield about 20,000 gross tons of scrap, plus some equipment items which can be reclaimed and sold for further use. The dismantling operation is expected to take six months.

The *Big E* was commissioned 20 years ago. It cost $19 million. The carrier was recently put up for bids by the Navy and sold to Lipsett for $561,333.

Chicago—Essentially, this market is unchanged; it's caught between

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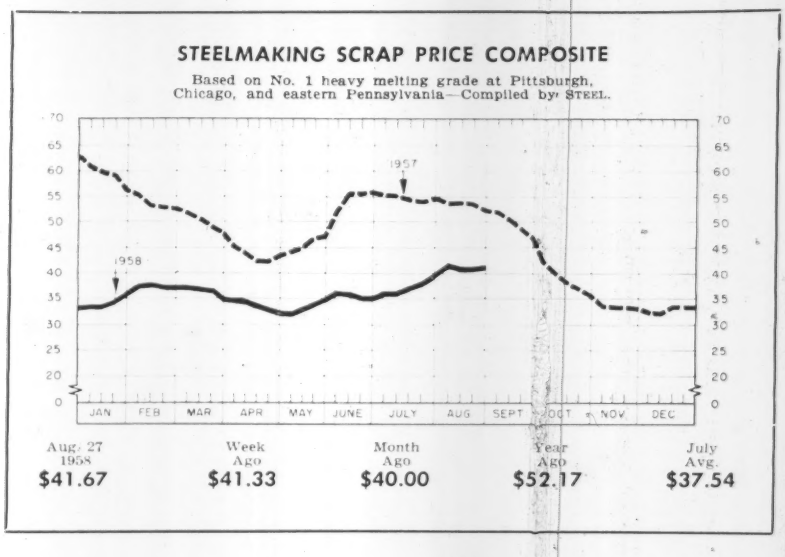
STEELMAKING SCRAP PRICE COMPOSITE
Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania—Compiled by STEEL.
1957
1958
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
Aug. 27 1958 $41.67
Week Ago $41.33
Month Ago $40.00
Year Ago $52.17
July Avg. $37.54

the opposing pressures of a steadily rising steelmaking rate and a lack of buying by mills. The situation is not expected to change before mid-September. Around that time, an important mill is expected to resume buying. By that time, too, there may be some indication whether the auto industry will be hit by a strike.

Mills have ample scrap inventories and are increasing their production of hot metal.

Pittsburgh—Prices are nominally weaker in a dull market. Small lots of No. 1 heavy melting scrap are going to consumers for as little as $41 a ton. One mill reports buying No. 2 bundles at $30, but the quantities purchased haven't been large enough to support the view that the market is deteriorating. Although there have been no indications that major consumers will buy during September, higher steelmaking operations are giving dealers' hopes a lift.

Mills show little interest in Fisher Body Div.'s September list. Brokers will have to buy on speculation. They had a hard time unloading what they bought last month (at $49.25), so they'll probably pare their bids by $2 to $5.

Youngstown—The scrap market here remains quiet with brokers continuing to buy at lower prices, although consumer prices remain firm. Fear of an automobile strike early in September is restricting activity in the market. Large quantities of scrap are readily available.

Cleveland—Several important automotive lists are closing. They'll show whether the market can continue to gain strength in the face of a possible automotive strike which could reduce steelmaking activity later this month. A mill purchasing agent in this area predicts that mills will cut their scrap purchases in early September, with the possible result of reducing quotations $2 to $3 a ton. There were no important purchases in late August.

Detroit—Local prices are unchanged. Dealers are pessimistic because of the lack of mill orders. They say that continuing low tonnages of auto lists are a big factor in keeping prices down. They do not expect any major upswing even after carbuilders begin production. Their reason: Steel producers are accumulating stocks of ingots and semifinished material to meet heavier demand for finished steel. By the time the mills need more scrap, the auto companies will be generating large tonnages which will tend to keep prices down.

Buffalo—Cast scrap moved up $2 a ton here as a result of new foundry purchases. Cupola cast sold as $41. At the same time, dealers advanced the price of No. 1 machinery cast $2 to $45.

There is little action in steel mill grades. Dealers have pretty well cleaned up orders taken early in August and are now looking for new business from mills.

Most observers expect scrap prices will hold around current levels in September. The recent price rise has leveled off and steel mills can light additional blast furnaces and reduce their use of scrap if they feel prices are getting too high.

Cincinnati — This market is steady, but lacks new buying. Broker quotations are unchanged, but the trade is poised to swing in either price direction. Some expect a small reaction to the recent strength. Increased steelmaking op-

(*Please turn to Page* 111)

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Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including brokers' commission, as reported to STEEL, Aug. 27, 1958. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

Aug. 27	$41.67
Aug. 20	41.33
July Avg.	37.54
Aug. 1957	53.33
Aug. 1953	43.40

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	42.00-43.00
No. 2 heavy melting	35.00-36.00
No. 1 dealer bundles	42.00-43.00
No. 2 bundles	31.00-32.00
No. 1 busheling	42.00-43.00
No. 1 factory bundles	49.00-50.00
Machine shop turnings	20.00-21.00
Mixed borings, turnings	20.00-21.00
Short shovel turnings	24.00-25.00
Cast iron borings	24.00-25.00
Cut structurals:	
2 ft and under	47.00-48.00
3 ft lengths	46.00-47.00
Heavy turnings	41.00-42.00
Punchings & plate scrap	49.00-50.00
Electric furnace bundles	49.00-50.00

Cast Iron Grades

No. 1 cupola	43.00-44.00
Stove plate	41.00-42.00
Unstripped motor blocks	23.00-24.00
Clean auto cast	39.00-40.00
Drop broken machinery	51.00-52.00

Railroad Scrap

No. 1 R.R. heavy melt.	49.00-50.00
Rails, 2 ft and under	57.00-58.00
Rails, 18 in. and under	58.00-59.00
Random rails	54.00-55.00
Railroad specialties	52.00-53.00
Angles, splice bars	53.00-54.00
Rails, rerolling	58.00-59.00

Stainless Steel Scrap

18-8 bundles & solids	195.00-200.00
18-8 turnings	115.00-120.00
430 bundles & solids	110.00-115.00
430 turnings	50.00-52.00

CHICAGO

No. 1 hvy melt, indus.	44.00-45.00
No. 1 hvy melt., dealer	42.00-43.00
No. 2 heavy melting	*37.00-38.00*
No. 1 factory bundles	48.00-49.00
No. 1 dealer bundles	42.00-43.00
No. 2 bundles	*30.00-31.00*
No. 1 busheling, indus.	44.00-45.00
No. 1 busheling, dealer	42.00-43.00
Machine shop turnings	21.00-22.00
Mixed borings, turnings	23.00-24.00
Short shovel turnings	23.00-24.00
Cast iron borings	23.00-24.00
Cut structurals, 3 ft	48.00-49.00
Punchings & plate scrap	49.00-50.00

Cast Iron Grades

No. 1 cupola	45.00-46.00
Stove plate	43.00-44.00
Unstripped motor blocks	*38.00-39.00*
Clean auto cast	51.00-52.00
Drop broken machinery	51.00-52.00

Railroad Scrap

No. 1 R.R. heavy melt.	48.00-49.00
R.R. malleable	57.00-58.00
Rails, 2 ft and under	60.00-61.00
Rails, 18 in. and under	61.00-62.00
Angles, splice bars	55.00-56.00
Axles	67.00-68.00
Rails, rerolling	64.00-65.00

Stainless Steel Scrap

18-8 bundles & solids	205.00-210.00
18-8 turnings	105.00-110.00
430 bundles & solids	105.00-110.00
430 turnings	60.00-65.00

YOUNGSTOWN

No. 1 heavy melting	43.00-44.00
No. 2 heavy melting	30.00-31.00†
No. 1 busheling	43.00-44.00
No. 1 bundles	43.00-44.00
No. 2 bundles	30.00-31.00†
Machine shop turnings	15.00-16.00†
Short shovel turnings	20.00-21.00
Cast iron borings	20.00-21.00
Low phos.	45.00-46.00
Electric furnace bundles	45.00-46.00

Railroad Scrap

No. 1 R.R. heavy melt.	47.00-48.00†

CLEVELAND

No. 1 heavy melting	39.50-40.50
No. 2 heavy melting	26.00-27.00
No. 1 factory bundles	46.00-47.00
No. 1 bundles	39.50-40.50
No. 2 bundles	28.00-29.00
No. 1 busheling	39.50-40.50
Machine shop turnings	14.00-15.00
Short shovel turnings	19.00-20.00
Mixed borings, turnings	19.00-20.00
Cast iron borings	19.00-20.00
Cut foundry steel	41.00-42.00
Cut structurals, plates 2 ft and under	49.00-50.00
Low phos. punchings & plate	41.00-42.00
Alloy free, short shovel turnings	22.00-23.00
Electric furnace bundles	40.50-41.50

Cast Iron Grades

No. 1 cupola	44.00-45.00
Charging box cast	37.00-38.00†
Heavy breakable cast	36.00-37.00
Stove plate	46.00-47.00
Unstripped motor blocks	32.00-33.00
Brake shoes	36.00-37.00
Clean auto cast	49.00-50.00
Burnt cast	33.00-34.00
Drop broken machinery	49.00-50.00

Railroad Scrap

R.R. malleable	60.00-61.00
Rails, 2 ft and under	57.00-58.00
Rails, 18 in. and under	58.00-59.00
Rails, random lengths	52.00-53.00
Cast steel	49.00-50.00
Railroad specialties	50.00-51.00
Uncut ties	43.00-44.00
Angles, splice bars	50.00-51.00
Rails, rerolling	56.00-57.00

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	185.00-190.00
18-8 turnings	100.00-105.00
430 clips, bundles, solids	90.00-100.00
430 turnings	40.00-50.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	39.00
No. 2 heavy melting	37.00
No. 1 bundles	41.00
No. 2 bundles	30.00
No. 1 busheling	41.00
Machine shop turnings	20.00†
Short shovel turnings	22.00†

Cast Iron Grades

No. 1 cupola	*47.00*
Charging box cast	*39.00*
Heavy breakable cast	*38.00*
Unstripped motor blocks	39.00
Clean auto cast	48.00
Stove plate	45.50

Railroad Scrap

No. 1 R.R. heavy melt.	44.00
Rails, 18 in. and under	52.00
Rails, random lengths	48.00
Rails, rerolling	61.00
Angles, splice bars	47.00

BIRMINGHAM

No. 1 heavy melting	35.00-36.00*
No. 2 heavy melting	30.00-31.00*
No. 1 bundles	35.00-36.00*
No. 2 bundles	24.00-25.00
No. 1 busheling	35.00-36.00*
Cast iron borings	12.00-13.00
Machine shop turnings	*24.00-25.00*
Short shovel turnings	*25.00-26.00*
Bars, crops and plates	46.00-47.00
Structurals & plates	45.00-46.00
Electric furnace bundles	39.00-40.00
Electric furnace:	
2 ft and under	38.00-39.00
3 ft and under	37.00-38.00

Cast Iron Grades

No. 1 cupola	54.00-55.00
Stove plate	54.00-55.00
Unstripped motor blocks	*42.00-43.00*
Charging box cast	22.00-23.00
No. 1 wheels	39.00-40.00

Railroad Scrap

No. 1 R.R. heavy melt.	39.00-40.00
Rails, 18 in. and under	51.00-52.00
Rails, rerolling	59.00-60.00
Rails, random lengths	*46.00-47.00*
Angles, splice bars	47.00-48.00

PHILADELPHIA

No. 1 heavy melting	*39.00*
No. 2 heavy melting	*35.00*
No. 1 bundles	*39.00*
No. 2 bundles	25.00†
No. 1 busheling	*39.00*
Electric furnace bundles	*40.00*
Mixed borings, turnings	*20.00-21.00†*
Short shovel turnings	23.00-24.00
Machine shop turnings	20.00-21.00
Heavy turnings	*34.00*
Structurals & plate	*42.00-44.00*
Couplers, springs, wheels	45.50
Rail crops, 2 ft & under	57.00-58.00

Cast Iron Grades

No. 1 cupola	40.00
Heavy breakable cast	42.00
Malleable	58.00-59.00
Drop broken machinery	48.00-50.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	32.00-33.00
No. 2 heavy melting	29.00
No. 1 bundles	32.00-33.00
No. 2 bundles	19.00-20.00
Machine shop turnings	10.00-11.00
Mixed borings, turnings	11.00-12.00
Short shovel turnings	13.00-14.00
Low phos (structurals & plates)	35.00-36.00

Cast Iron Grades

No. 1 cupola	35.00-36.00
Unstripped motor blocks	*28.00-29.00*
Heavy breakable	33.00-34.00

Stainless Steel

18-8 sheets, clips, solids	175.00-180.00
18-8 borings, turnings	*65.00-70.00*
410 sheets, clips, solids	50.00-55.00
430 sheets, clips, solids	*65.00-70.00*

BUFFALO

No. 1 heavy melting	34.00-35.00
No. 2 heavy melting	29.00-30.00
No. 1 bundles	34.00-35.00
No. 2 bundles	27.00-28.00
No. 1 busheling	34.00-35.00
Mixed borings, turnings	17.00-18.00
Machine shop turnings	14.00-15.00
Short shovel turnings	19.00-20.00
Cast iron borings	17.00-18.00
Low phos. structurals and plate, 5 ft and under	39.00-40.00
2 ft and under	43.00-44.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	*40.00-41.00*
No. 1 machinery	*44.00-45.00*

Railroad Scrap

Rails, random lengths	53.00-54.00
Rails, 3 ft and under	59.00-60.00
Railroad specialties	43.00-44.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	38.50-39.50
No. 2 heavy melting	33.50-34.50
No. 1 bundles	38.50-39.50
No. 2 bundles	26.00-27.00
No. 1 busheling	38.50-39.50
Machine shop turnings	18.00-19.00
Mixed borings, turnings	17.00-18.00
Short shovel turnings	20.00-21.00
Cast iron borings	17.00-18.00
Low phos. 18 in.	42.00-43.00

Cast Iron Grades

No. 1 cupola	42.00-43.00
Heavy breakable cast	34.00-35.00
Charging box cast	34.00-35.00
Drop broken machinery	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt.	42.00-43.00
Rails, 18 in. and under	53.00-54.00
Rails, random lengths	43.00-44.00

HOUSTON

(Brokers' buying prices; f.o.b. cars)

No. 1 heavy melting	38.00
No. 2 heavy melting	33.00
No. 2 bundles	24.00
Machine shop turnings	17.00
Short shovel turnings	20.00
Low phos. plates & structurals	*42.00*

Cast Iron Grades

No. 1 cupola	*45.00*
Heavy breakable	30.00†
Foundry malleable	38.00
Unstripped motor blocks	*36.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*38.00*

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	35.00
No. 2 heavy melting	22.50
No. 1 bundles	25.00
No. 2 bundles	21.00
No. 1 busheling	25.00
Machine shop turnings	7.00-8.00
Short shovel turnings	8.00-9.00
No. 1 cast	30.00
Mixed cupola cast	29.00
No. 1 machinery cast	36.00-38.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	34.00-35.00
No. 2 heavy melting	25.00-26.00
No. 1 bundles	35.00-36.00
No. 2 bundles	22.00-23.00
No. 1 busheling	33.00-34.00
Machine shop turnings	11.00-12.00
Mixed borings, turnings	12.00-13.00
Short shovel turnings	13.00-14.00
Punchings & plate	33.00-34.00

Cast Iron Grades

No. 1 cupola	38.00-39.00
Stove plate	29.00-30.00
Charging box cast	29.00-30.00
Heavy breakable	28.00-29.00
Unstripped motor blocks	18.00-19.00
Clean auto cast	40.00-41.00

SEATTLE

No. 1 heavy melting	30.00†
No. 2 heavy melting	28.00†
No. 1 bundles	22.00†
No. 2 bundles	20.00†
Machine shop turnings	9.00-10.00†
Mixed borings, turnings	9.00-10.00†
Electric furnace No. 1	38.00

Cast Iron Grades

No. 1 cupola	31.00
Heavy breakable cast	28.00
Unstripped motor blocks	23.00
Stove plate (f.o.b. plant)	21.00

LOS ANGELES

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	28.00
No. 2 bundles	20.00
Machine shop turnings	11.00
Shoveling turnings	11.00
Cast iron borings	11.00
Cut structurals and plate 1 ft and under	45.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	41.00

Railroad Scrap

No. 1 R.R. heavy melt.	32.00

SAN FRANCISCO

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	30.00
No. 2 bundles	22.00
Machine shop turnings	15.00
Mixed borings, turnings	15.00
Cast iron borings	15.00
Heavy turnings	15.00
Short shovel turnings	15.00
Cut structurals, 3 ft	40.00

Cast Iron Grades

No. 1 cupola	42.00
Charging box cast	34.00
Stove plate	34.00
Heavy breakable cast	28.00
Unstripped motor blocks	31.00
Clean auto cast	40.00
Drop broken machinery	40.00
No. 1 wheels	34.00

HAMILTON, ONT.

No. 1 heavy melting	30.00
No. 2 heavy melting	26.00
No. 1 bundles	30.00
No. 2 bundles	23.00
Mixed steel scrap	25.00
Mixed borings, turnings	15.00
Busheling, new factory: Prepared	30.00
Unprepared	24.00
Short steel turnings	19.00

Cast Iron Grades‡

No. 1 machinery cast	45.00-50.00

*Brokers' buying price.
†Nominal.
‡F.o.b. Hamilton, Ont.

Often overloaded... but seldom needs repair!

It's a P&H HEVI-LIFT HOIST with maintenance-free RCD brake

In handling steel sheets, beams, and tubes, this 6,0[illegible]lb. capacity Hevi-Lift® frequently is loaded beyond rated capacity. Yet downtime is half what you'd expect.

Maintenance records show that more than 50% of hoist troubles occur at the brake. But not so with a P&H Hevi-Lift. Its mill-type RCD brake has fewer parts to break down. Total brake movement is only 1/32 of an inch — there's no violent hammer-action to cause wear.

Send for Bulletin H-5 which tells you the complete story of P&H Hevi-Lifts (capacities, 1,000-40,000 lbs.) See your P&H distributor — or write Dept 206E, Harnischfeger Corp., Milwaukee 46, Wisconsin.

HARNISCHFEGER

P&H . . . quality and service for 74 years

Seaton Plan Not Buried Yet

Though killed by the 85th Congress, it will reappear in the next session in different, perhaps more acceptable, form. Tariffs are still possible. Bartering is extended

Nonferrous Metal Prices, Pages 110 & 111

BARRING a miraculous recovery of nonferrous business this fall, the Seaton Plan will again be before Congress next year. The plan's defeat in the closing sessions of the 85th Congress is not final, Capitol Hill sources agree, especially if the President puts his weight behind it next January.

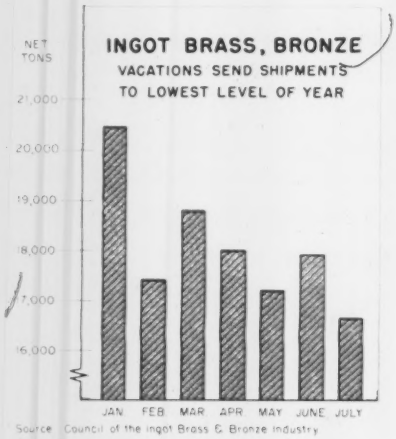
It's much too early to guess chances of passage next year (and the plan could be radically changed) but mineral-minded congressmen, now at home where they have to face the music, are certain to come up with something that stands a better chance of passage than S. 4036.

The exclusion of copper stockpiling would be one way to pick up some votes. The tipoff on that was the Capitol Hill reaction to the announcement by Kennecott Copper Corp. on the eve of a vote on S. 4036 that it would go to a six-day week this month.

Tariff Status—Word of the Tariff Commission's proposal to raise lead and zinc tariffs has yet to come from the White House. But an order either for or against increased tariffs is almost certain to bring a reiteration of the administration's program demanding a "long range" policy.

One thing to watch for this fall: Sen. Gordon Allott (R., Colo.) is expected to announce his plan to stabilize the mineral industries at a certain level of production, allowing imports to carry only a historic percentage of the U. S. market. The climate appears to be right for such a plan to receive some favor on Capitol Hill, in view of the protectionist amendments to the Trade Agreements Act passed this session.

How Vote Went—Looking at the voting record in the House on S. 4036, it is not hard to understand why the Seaton Plan failed. The vote was 182 to 159, with 88 representatives not voting. The economy bloc, headed by Appropriations Committee members and northern urban congressmen, led the way. Some protectionists voted against the subsidy plan, arguing that increased tariffs were the right way to help the mineral folks. Democrats voted 113 yeas, 76 nays; Republicans, 46 yeas, 106 nays.



Source: Council of the Ingot Brass & Bronze Industry

Even the removal of the tungsten and fluorspar programs from the bill failed to save it from defeat.

One angle to watch closely this fall and early next year is the Congressional attitude toward government spending. Some observers now see Congress returning to its economy attitude of 1957 as an aftermath of its antirecession splurges of 1958. If Congress does follow through in this attitude (with the major exception of increased defense spending in fiscal 1960), subsidy legislation will stand no chance.

Deficits running past the $12-billion mark are certain to take their toll of this sort of legislation, so congressmen like Senator Allott reason that the best approach is restriction of imports by one means or another. The defense issue in the case of stockpiling lead, zinc, copper, and the other minerals seems to be dead.

No Major Bartering—The outlook for a barter program of any appreciable size next year also appears to be dim. The Agriculture Department's power to sell, barter, or give away surplus farm crops has been extended to the end of 1959, but there is no specific directive to the department to barter any amount of the crops for strategic minerals. Secretary Ezra Benson is simply directed to "barter to the maximum extent practicable." Recently, the secretary has drastically curtailed the program on the ground it took the place of normal sales.

Kaiser Reactivates Potline

Improved sales was given as the reason for reactivating another potline at Kaiser Aluminum & Chemical Corp.'s Mead, Wash., reduction plant last week. Six of the eight potlines at the plant are now in operation. A month ago, one line at Mead and one at Chalmette, La., were reactivated.

NONFERROUS PRICE RECORD

	Aug. 27 Price	Last Change	Previous Price	July Avg	June Avg	Aug., 1957 Avg
Aluminum	24.70	Aug. 1, 1958	24.00	24.000	24.000	28.100
Copper	26.50	Aug. 6, 1958	26.50-27.00	26.125	25.400	28.639
Lead	10.55	Aug. 13, 1958	10.80	10.800	11.040	13.800
Magnesium	35.25	Aug. 13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec. 6, 1956	64.50	74.000	74.000	74.000
Tin	94.875	Aug. 22, 1958	95.00	94.950	94.701	94.259
Zinc	10.00	July 1, 1957	10.50	10.000	10.000	10.000

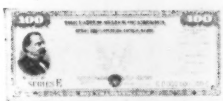
Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig, 99.8%, Velasco, Tex.

A nurse nudged us to action

"We ought to tell *all* our people about U.S. Savings Bonds as regularly as we tell them about safety," said our nurse in the first aid room. "Many of the men and women who come in here don't even know we have a Payroll Savings Plan."

We had to admit she was right. And when we called our State Savings Bond Director, he agreed with her. He helped us set up a company-wide information plan that tells every employee—frequently—about the advantages of buying U.S. Savings Bonds systematically.

That was just a few days ago. Today we have the largest employee participation we've had since the mid-forties. People always welcome a chance to make use of this sound and simple savings plan. Today there are more payroll savers than ever before in peacetime. Look up *your* State Director in the phone book or write: Savings Bonds Division, U.S. Treasury Dept., Washington, D. C.



STEEL
The Metalworking Weekly

THE U. S. GOVERNMENT DOES NOT PAY FOR THIS ADVERTISEMENT. THE TREASURY DEPARTMENT THANKS, FOR THEIR PATRIOTISM, THE ADVERTISING COUNCIL AND THE DONOR ABOVE

Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs 24.70; ingots, 26.80, 30,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 28.60; No. 43, 28.40; No. 195, 29.40; No. 214, 30.20; No. 356, 28.60; 30 or 40 lb ingots.

Antimony: R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50; f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 23.50-24.50, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.25% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per ton, ton lots.

Cadmium: Sticks and bars, $1.55 per lb deld.

Cobalt: 97.99%, $2.00 per lb for 550-lb keg; $2.02 per lb for 100 lb case; $2.07 per lb under 100 lb.

Columbium: Powder, $55-85 per lb, nom.

Copper: Electrolytic, 26.50 deld.; custom smelters, 26.50; lake, 26.50 deld.; fire refined, 26.25 deld.

Germanium: First reduction, $179.17-197.31 per lb; intrinsic grade, $197.31-220 per lb, depending on quantity.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $70-80 nom. per troy oz.

Lead: Common, 10.55; chemical, 10.65; corroding, 10.65, St. Louis. New York basis, add 0.20.

Lithium: 98 + %, 50-100 lb, cups or ingots, $12; rod, $15; shot or wire, $16. 100-500 lb, cups or ingots, $10.50; rod, $14; shot or wire, $15, f.o.b. Minneapolis.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. sticks, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $240-244 per 76-lb flask.

Molybdenum: Unalloyed turned extrusions, 3.75-5.75 in. round, $9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter at Buffalo, New York, or other established U. S. points of entry, contained nickel, 69.60.

Osmium: $70-100 per troy oz nom.

Palladium: $15-19 per troy oz.

Platinum: $62-65 per troy oz from refineries.

Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $118-125 per troy oz.

Ruthenium: $45-55 per troy oz.

Selenium: $7.00 per lb, commercial grade.

Silver: Open market 88.625 per troy oz.

Sodium: 17.00 c.l.; 19.00-19.50 l.c.l.

Tantalum: Rod, $60 per lb; sheet, $55 per lb.

Tellurium: $1.65-1.85 per lb.

Thallium: $7.50 per lb.

Tin: Straits, N. Y., spot, 94.875; prompt, 95.625.

Titanium: Sponge, 99.3 + % grade A-1, ductile (0.3% Fe max.), 2.05; grade A-2 (0.5% Fe max.), $1.85 per lb.

Tungsten: Powder, 98.8%, carbon reduced, 1000-lb lots, $3.15 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99 + % hydrogen reduced, $3.30-3.80.

Zinc: Prime Western, 10.00; brass special, 10.25; intermediate, 10.50, East St. Louis, freight allowed over 0.50 per lb, New York basis, add 0.50. High grade, 11.00; special high grade, 11.25 deld. Diecasting alloy ingot No. 3, 12.25; No. 2, 12.75; No. 5, 12.50 deld.

Zirconium: Sponge, commercial grade, $5-10 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 23.50-25.25; No. 12 foundry alloy (No. 2 grade), 21.50-22.00; 5% silicon alloy, 0.60 Cu max., 24.75-25.00; 13 alloy 0.60 Cu max., 24.75-25.00; 195 alloy, 25.25-26.00; 108 alloy, 22.25-22.50. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 22.75; grade 2, 21.50; grade 3, 20.50; grade 4, 17.75.

Brass Ingot: Red brass, No. 115, 27.00; tin bronze, No. 225, 36.00; No. 245, 30.75; high-leaded tin bronze, No. 305, 31.25; No. 1 yellow, No. 405, 22.75; manganese bronze, No. 421, 24.50.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.845, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.825, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 20,000-lb lots, 31.855; l.c.l., 32.48. Weatherproof, 20,000-lb lots, 33.66, l.c.l., 34.41, before quantity discounts.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $16.25 per cwt; pipe, full coils, $16.25 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheets and strip, $8.50-15.95; sheared mill plate, $6.00-9.50; wire, $6.50-11.00; forging billets, $1.10-4.35; hot-rolled and forged bars, $5.25-6.35.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 24.00; ribbon zinc in coils, 20.50; plates, 19.00.

ZIRCONIUM

Plate, $12.50-19.20; H.R. strip, $12.50-22.90; C.R. strip, $15.90-31.25; forged or H.R. bars, $11.00-17.40.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	126	106	128
Strips, C.R.	124	108	128
Plate, H.R.	120	105	121
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

Sheets: 1100, 3003, and 5005 mill finish (30,000 lb base; freight allowed).

Thickness Range, Inches	Flat Sheet	Coiled Sheet
0.250-0.136	42.80-47.30	.....
0.136-0.096	43.20-48.30	.....
0.126-0.103	.....	39.20-39.80
0.096-0.077	43.80-50.00	39.30-40.00
0.077-0.068	44.30-52.20	.....
0.077-0.061	.....	39.50-40.70
0.068-0.061	44.30-52.20	.....
0.061-0.048	44.90-54.40	40.10-41.80
0.048-0.038	45.40-57.10	40.60-43.20
0.038-0.030	45.70-62.00	41.00-45.70
0.030-0.024	46.20-53.70	41.30-45.70
0.024-0.019	46.90-56.80	42.40-44.10
0.019-0.017	47.70-54.10	43.00-44.70
0.017-0.015	48.60-55.00	43.80-45.50
0.015-0.014	49.60	44.80-46.50
0.014-0.012	50.80	45.50
0.012-0.011	51.80	46.70
0.011-0.0095	53.30	48.10
0.0095-0.0085	54.60	49.60
0.0085-0.0075	56.20	50.80
0.0075-0.007	57.70	52.30
0.007-0.006	59.30	53.70

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in., 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	42.40	47.20
5050-F	43.50	48.30
3004-F	44.50	50.20
5052-F	45.10	50.90
6061-T6	45.60	51.70
2024-T4	49.30	56.10
7075-T6*	57.60	64.70

*24-48 in. width or diam., 72-180 in. lengths.

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats*	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
0.125	76.90	73.90	....	....
0.250	62.00	60.20	89.10	76.60
0.375	61.20	60.00	73.50	68.50
0.500	61.20	60.00	73.50	68.50
0.625	61.20	60.00	69.80	64.20
0.750	59.70	58.40	63.60	60.40
0.875	59.70	58.40	63.60	60.40
1.000	59.70	58.40	63.60	60.40
1.125	57.30	56.10	61.50	58.30
1.250	57.30	56.10	61.50	58.30
1.375	57.30	56.10	61.50	58.30
1.500	57.30	56.10	61.50	58.30
1.625	55.00	53.60	....	56.20
1.750	55.00	53.60	60.30	56.20
1.875	55.00	53.60	....	56.20
2.000	55.00	53.60	60.30	56.20
2.125	53.50	52.10	....	....
2.250	53.50	52.10	....	56.20
2.375	53.50	52.10	....	....
2.500	53.50	52.10	....	56.20
2.625	....	50.40	....	....
2.750	51.90	50.40	....	56.20
2.875	....	50.40	....	....
3.000	51.90	50.40	....	56.20
3.125	....	50.40	....	....
3.250	....	50.40	....	....
3.375	....	50.40	....	....

*Selected sizes.

Forging Stock: Round, Class 1, random lengths, diam. 0.375-8 in., "F" temper; 2014, 42.20-55.00; 6061, 41.60-55.00; 7075, 61.60-75.00; 7070, 66.60-80.00.

Pipe: ASA schedule 40, alloy 6063-T6, standard lengths, plain ends, 90,000 lb base, dollars per 100 ft. Nominal pipe sizes: ¾ in., 18.85; 1 in., 29.75; 1¼ in., 40.30; 1½ in., 48.15; 2 in., 58.30; 4 in., 160.20; 6 in., 287.55; 8 in., 432.70.

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
9-11	42.70-44.20	51.30-55.50
12-14	42.70-44.20	52.00-56.50
15-17	42.70-44.20	53.20-58.20
18-20	43.20-44.70	55.20-60.80

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grades, .032 in., 171.30; .081 in., 108.70; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths; .125 in., 74.90; .188 in., 71.70-72.70; .25-.75 in., 70-60-71.60. Tooling plate, .25-3.0 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	69.60-72.40	84.60-87.40
12-14	70.70-73.00	85.70-88.00
24-26	75.60-76.30	90.60-91.30
36-38	89.20-90.30	104.20-105.30

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots.)

Copper and Brass: No. 1 heavy copper and wire, 19.50-20.00; No. 2 heavy copper and wire, 17.75-18.25; light copper, 15.75-16.25; No. 1 composition red brass, 15.75-16.25; No. 1 com-

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES e (Based on copper at 26.50c)		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tubes	Clean Heavy	Rod Ends	Clean Turnings
Copper	49.63b	46.86c	....	49.82	22.500	22.500	21.750
Yellow Brass	43.57	29.28d	44.11	46.48	17.000	16.750	15.250
Low Brass, 80%	46.03	45.97	46.57	48.84	19.000	18.750	18.250
Red Brass, 85%	46.89	46.83	47.43	49.70	19.750	19.500	19.000
Com. Bronze, 90%	48.30	48.24	48.84	50.86	20.625	20.375	19.875
Manganese Bronze	51.52	45.74	56.18	....	15.625	15.375	14.875
Muntz Metal	45.95	41.76	....	....	15.875	15.625	15.125
Naval Brass	47.83	42.14	54.89	50.99	15.625	15.375	14.875
Silicon Bronze	54.37	53.56	54.41	56.29	22.125	21.875	21.125
Nickel Silver, 10%	58.82	61.15	61.15	....	22.000	21.750	11.000
Phos. Bronze, A-5%	68.59	69.09	69.09	70.27	23.375	23.125	22.125

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb.

position turnings, 14.75-15.25; new brass clippings, 13.50-14.00; light brass, 9.50-10.00; heavy yellow brass 11.00-11.50; new brass rod ends, 11.50-12.00; auto radiators, unsweated, 12.00-12.50; cocks and faucets, 13.00-13.50; brass pipe, 13.00-13.50.

Lead: Heavy, 6.75-7.00; battery plates, 2.25-2.50; linotype and stereotype, 8.75-9.75; electrotype, 7.25-7.75; mixed babbitt, 9.00-9.50.

Monel: Clippings, 28.00-29.00; old sheets, 25.00-26.00; turnings, 20.00-23.00; rods, 28.00-29.00.

Nickel: Sheets and clips, 42.00-45.00; rolled anodes, 42.00-45.00; turnings, 37.00-40.00; rod ends, 42.00-45.00.

Zinc: Old zinc, 3.00-3.25; new diecast scrap, 2.75-3.00; old diecast scrap, 3.00-3.25.

Aluminum: Old castings and sheets, 9.50-10.00; clean borings and turnings, 6.00-6.50; segregated low copper clips, 13.00-13.50; segregated high copper clips, 12.00-12.50; mixed low copper clips, 12.75-13.25; mixed high copper clips, 11.50-12.00.

(Cents per pound, Chicago)

Aluminum: Old castings and sheets, 10.50-11.00; clean borings and turnings, 9.50-10.00; segregated low copper clips, 16.50-17.00; segregated high copper clips, 15.00-15.50; mixed low copper clips, 15.50-16.00; mixed high copper clips, 15.00-15.50.

(Cents per pound, Cleveland)

Aluminum: Old castings and sheets, 9.25-10.00; clean borings and turnings, 8.50-9.00; segregated low copper clips, 13.50-14.00; segregated high copper clips, 12.00-12.50; mixed low copper clips, 12.00-12.50; mixed high copper clips, 11.00-11.50.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 52.50; light scrap, 47.50; turnings and borings, 32.50.

Copper and Brass: No. 1 heavy copper and wire, 22.25; No. 2 heavy copper and wire, 21.25; light copper, 19.00; refinery brass (60% copper) per dry copper content, 20.25.

INGOTMAKERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 21.75; No. 2 heavy copper and wire, 20.75; light copper, 18.50; No. 1 composition borings, 18.00; No. 1 composition solids, 18.50; heavy yellow brass solids, 12.75; yellow brass turnings, 11.75; radiators, 14.50.

PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.55.
Copper: Flat-rolled, 43.03; oval, 14.50, 5000-10,000 lb; electrodeposited, 35.25, 2000-5000 lb lots; cast, 37.75, 5000-10,000 lb quantities.
Nickel: Depolarized, less than 100 lb, 114.25; 100-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.
Tin: Bar or slab, less than 200 lb, 113.50; 200-499 lb, 112.00; 500-999 lb, 111.50; 1000 lb or more, 111.00.
Zinc: Balls, 16.00; flat tops, 16.00; flats, 19.25; ovals, 18.50, ton lots.

CHEMICALS

Cadmium Oxide: $1.55 per lb in 100-lb drums.
Chromic Acid (flake): 100-2000 lb, 31.00; 2000-10,000 lb, 30.50; 10,000-20,000 lb, 30.00; 20,000 lb or more, 29.50.
Copper Cyanide: 100-200 lb, 65.90; 300-900 lb, 63.90; 1000-19,900 lb, 61.90.
Copper Sulphate: 100-1900 lb, 14.05; 2000-5900 lb, 12.05; 6000-11,900 lb, 11.80; 12,000-22,900 lb, 11.55; 23,000 lb or more, 11.05.
Nickel Chloride: 100 lb, 48.50; 200 lb, 46.50; 300 lb, 45.50; 400-999 lb, 43.50; 10,000 lb or more, 40.50.
Nickel Sulphate: 5000-22,000 lb, 29.00; 23,000-35,900 lb, 28.50; 36,000 lb or more, 28.00.
Sodium Cyanide (Cyanobrik): 200 lb, 20.80; 400-800 lb, 19.80; 1000-19,800 lb, 18.80; 20,000 lb or more, 17.80.
Sodium Stannate: Less than 100 lb, 75.80; 100-600 lb, 66.80; 700-1900 lb, 64.50; 2000-9900 lb, 62.20; 10,000 lb or more, 60.80.
Stannous Chloride (anhydrous): 25 lb, 150.70; 100 lb, 145.90; 400 lb, 143.40; 800-19,900 lb, 102.60; 20,000 lb or more, 96.50.
Stannous Sulphate: Less than 50 lb, 136.10; 50 lb, 106.10; 100-1900 lb, 104.10; 2000 lb or more, 102.10.
Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

(Concluded from Page 105)

erations in the district—best in ten months—add a buoyant note. No. 1 heavy melting continues at $38.50-$39.50, brokers' buying price.

St. Louis—This market is generally firm, although cast grades have softened. More steelmaking grades are coming out because of an advance which has averaged about $6 a ton over the last few months. Demand for cast shows no improvement. Developments in the Far East are being watched closely.

Birmingham — Activity in the scrap market is confined chiefly to small orders, but prices are steady. Dealers forecast higher prices when consumers again buy large tonnages. Unlike other markets where prices advanced sharply a few weeks ago and then tapered off, the Birmingham market has risen slowly. It did not reach the heights of northern markets and apparently will hold the gains it has made. A nearby mill boosted its price for turnings $3 a ton. Slightly higher prices are being paid by exporters on the South Atlantic Coast.

Houston — Medium tonnages of scrap are moving to the mill here on a 45-day order which expires Sept. 30. Based on the mill order, broker prices moved ahead from $3 to $6 a ton. This is the first increase since June.

Included in the purchase were No. 1 heavy melting, No. 2 heavy melting, No. 1 bundles and crushed turnings. The mill indicated a preference for the lower grades.

Mexican demand continued active, and scrap from south and southwest Texas is moving to the border where representative prices are up to $42 for No. 1 heavy melting and up to $38 for No. 2 heavy melting. Gulf coast exporters are out of the market for anything but bargain scrap. No loadings have been scheduled for September.

Los Angeles—Scrap dealers' sales were up slightly in August from those in July. The increase was due less to rising demand for steelmaking material than to resumption of normal activities following the summer vacation period.

Scrap Consumption Gains

Domestic consumption of ferrous scrap during June was 14 per cent higher than it was in May. It was the largest quantity consumed in any month during the first half, says the Bureau of Mines. Pig iron consumption increased 10 per cent. The total melt (8,466,000 tons) consisted of 52 per cent scrap and 48 per cent pig iron in June, compared with 51 per cent scrap and 49 per cent pig iron (7,554,000 tons) in May.

	Scrap for Consumption			Consumption		Consumers' Stocks End of Month	
	Home Scrap	Purchased Scrap (net)	Total	Scrap	Pig Iron	Scrap	Pig Iron*
Jan.	2,627,799	1,402,968	4,030,767	4,072,071	4,208,692	7,951,498	3,469,969
Feb.	2,193,112	1,305,930	3,490,042	3,491,441	3,551,679	7,951,446	3,458,088
Mar.	2,306,638	1,545,346	3,851,984	3,718,132	3,824,140	8,089,672	3,590,815
Apr.	2,105,667	1,465,357	3,571,024	3,429,191	3,378,893	8,249,478	3,600,304
May	2,256,556	1,500,512	3,757,098	3,862,491	3,691,550	8,145,996	3,502,406
June†	2,501,000	1,624,000	‡4,125,000	4,407,000	4,059,000	7,869,000	3,419,000

*Suppliers' stocks included with consumers' stocks. †Preliminary. ‡Excludes 124,000 gross tons of scrap shipped, transferred or otherwise disposed of during the month.

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GET CASH NOW
for your new surplus motors, controls and transformers!
AVAILABLE: NEW MOTORS
Over 5,000 new motors in stock, from ½HP to 200HP. Special low prices.
Write, wire or phone collect!
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Help Wanted

BLAST FURNACE COKE OVEN SUPERVISORS
Well established corporation operating blast furnaces and coke ovens in Alabama needs technically trained and experienced supervisors capable of qualifying in short time for high-level management positions at both blast furnace and coke oven plants. Submit full resume. All replies strictly confidential. Reply Box 687, STEEL, Penton Bldg., Cleveland 13, Ohio.

WORKS MANAGER
Experienced man for small merchant bar mill manufacturing bars and small shapes. Send resume giving details to: Box 686, STEEL, Penton Bldg., Cleveland 13, Ohio.

WE CAN HELP YOU TO CONTACT
high calibre men to fill specific jobs you have in mind—
Readers of STEEL include men of wide training and experience in the various branches of the metalworking industry.
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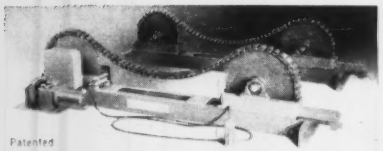
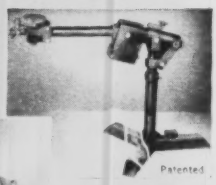
Offers You Over 200 PROVEN Standard Stock Models of Quality POSITIONERS "POSITIONEERED" to your exact Requirements



Patented

Aronson TracTred (T. M. Reg.) Turning Rolls for thin walled heavy cylindrical work to 27 tons capacity. Zero to 100 IPM turning speed and Built In Grounding.

Aronson Universal Balance Positioners (T. M. Reg.) position your weldments effectively, instantly for downhand welding. Capacities to 2000 lbs.



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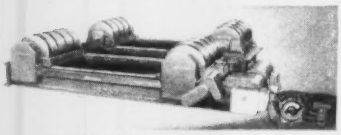
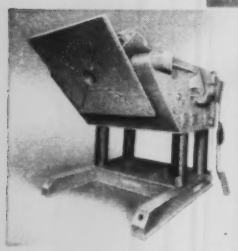
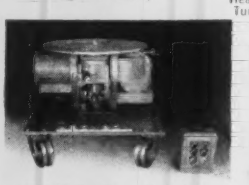


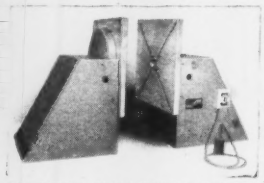
Heavy Duty Precision Built Rubber and Steel Tired Turning and Pipe Rolls, 100% overload protected. Capacities to 600 Tons.



Fully Automatic Gear Driven Positioners featuring Geared Elevation, 135° Tilting and Variable or Constant Speed Rotation. Capacities to 350,000 lbs.



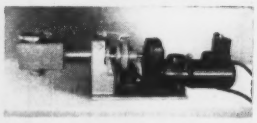
Model D Gear Driven Positioners. Compact. Precise. Rugged. Capacities to 1000 lbs.



Rugged Head and Tail Stock for positioning bulky weldments between centers. Table Backup for Zero Deflection. Magnetic Braking. Capacities to 160,000 lbs. Geared Elevation Optional.

Heavy Duty Floor Turntables with precision speed control and Magnetic Braking, used for welding, burning, X-raying, etc. Capacities to 120,000 lbs., various heights and speeds.

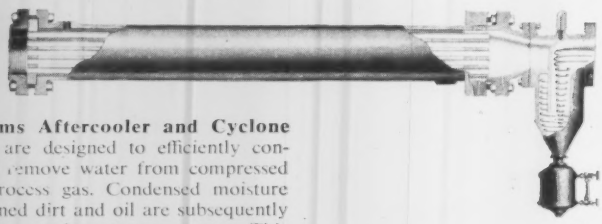
Bench Turntable Automatic Positioners with Mercury Grounding. Capacities to 500 lbs.



Quality POSITIONERS by **Aronson MACHINE COMPANY**
ARCADE, NEW YORK

Aftercooler and Cyclone Separator designed for cleaner, dryer compressed air

R. P. ADAMS CO., INC.
222 East Park Drive, Buffalo 17, New York



The Adams Aftercooler and Cyclone Separator are designed to efficiently condense and remove water from compressed air and process gas. Condensed moisture and entrained dirt and oil are subsequently removed in a cyclone type separator. This unit is scientifically designed for maximum removal efficiency over a wide range of flow rates.

For normal use, units are available to cool gases to within 10° F of the temperature of the cooling water. Specially designed units are available to permit a 2° F approach to cooling water temperature, for application where low moisture content is critical.

Adams Aftercoolers and Separators are available from stock to handle 20 - 40,000 cfm with 10° cooling and 25 - 19,200 cfm where it is necessary to cool within 2°F of the cooling water. Special units can be supplied to suit an unlimited range of requirements. In all cases the maximum pressure loss at rated capacities is ½ psi.

This wide range of sizes enables the economical utilization of Adams Aftercoolers and Separators in virtually all industrial application. For further information on how R. P. Adams' units will solve your compressed air problems and save you money, write today for Bulletin 711.

Tin Plate . . .

Tin Plate Prices, Page 97

Shipments of metal cans in June totaled 407,669 tons, compared with a revised total of 365,343 tons in May and 361,774 tons in June 1957, the Bureau of the Census reports. Movement during the first half of last year of 2,076,723 tons was down from the corresponding period of last year, when 2,127,204 tons were shipped.

Movement of fruit and vegetable cans (the major category) amounted to 111,304 tons in June, compared with a revised total of 85,157 tons in May and 100,872 tons in June of last year. Total for the first six months was 534,350 tons, down from 560,734 tons in the first six months of last year.

Shipments of beer cans (second largest category) amounted to 94,608 tons, compared with a revised total in May of 77,906 and with 77,682 in May 1957.

Container Shipments Drop

Shipments of steel shipping barrels and drums in June totaled 2,678,624 units, compared with 2,731,876 in May, and 3,123,265 in June a year ago, reports the Bureau of the Census. Total for the first six months is 15,440,876 units, compared with 18,629,871 in the corresponding period of last year.

The trend also is off in steel pails, with 6,775,443 units being shipped in June, compared with 6,882,328 units in May and 6,948,622 units in June, 1957. Total for the first six months was 35,233,422 units, against 38,258,173 in the same period of last year.

Plans $250,000 Expansion

Fleet of America Inc., Cheektowaga, N. Y., will spend $250,000 on a 20,000 sq ft plant addition and equipment, doubling its present facilities, says Tom Y. Smith, president.

Screwmatic Line Sold

Baker Bros. Inc., Toledo, Ohio, has bought the Detroit Screwmatic 750 line from Gear Grinding Machine Co., Detroit. Roland Lehr, Baker Bros. president, says the equipment will be marketed as the Baker Automatic Bar Machine.

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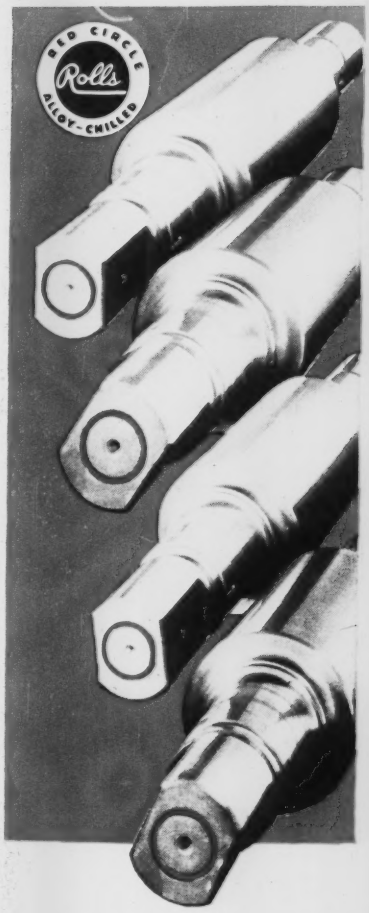

Red Circle Rolls

for all purposes

The Red Circle on the Roll is the Hyde Park mark of Quality. Hyde Park makes rolls for every type mill.

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Finer Finish, Longer Life
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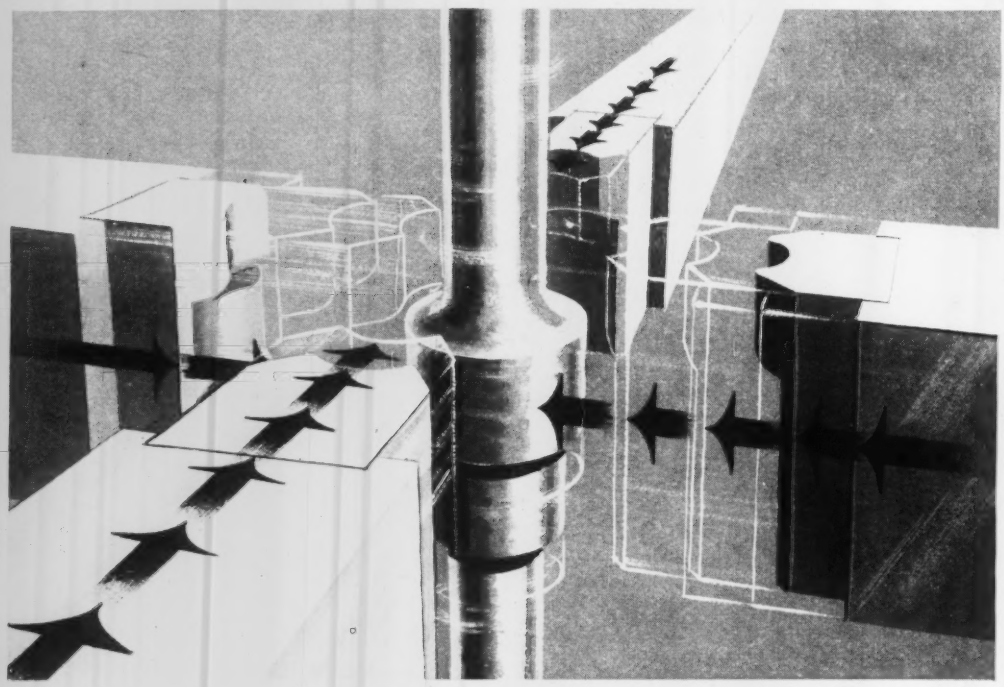
specify Red Circle

Hyde Park

FOUNDRY & MACHINE CO.

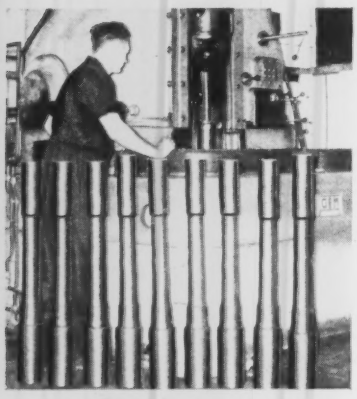
Hyde Park, Westmoreland Co., Pa.

ROLLS
ROLLING MILL MACHINERY
GRAY IRON CASTINGS



ANOTHER CURMET PROCESS

New Precision ROTARY FORGE saves up to 30% on Finished Parts



Curtiss-Wright Exclusive Rotary Forge produces precision parts . . . saves industrial buyers from 15% to 30%.

Producing complex solid or hollow parts from *less metal* and with *greater accuracy*, the Curtiss-Wright Rotary Forge provides industry with a new, economical source for precision forgings.

Parts are hot-forged in this CURMET process to tolerances of .015 inches outside and .005 inches inside or to still higher tolerances when cold forged. Expensive finishing time is cut down, chip loss is minimized and added strength and toughness assured . . . with overall savings on the forged part of up to 30%.

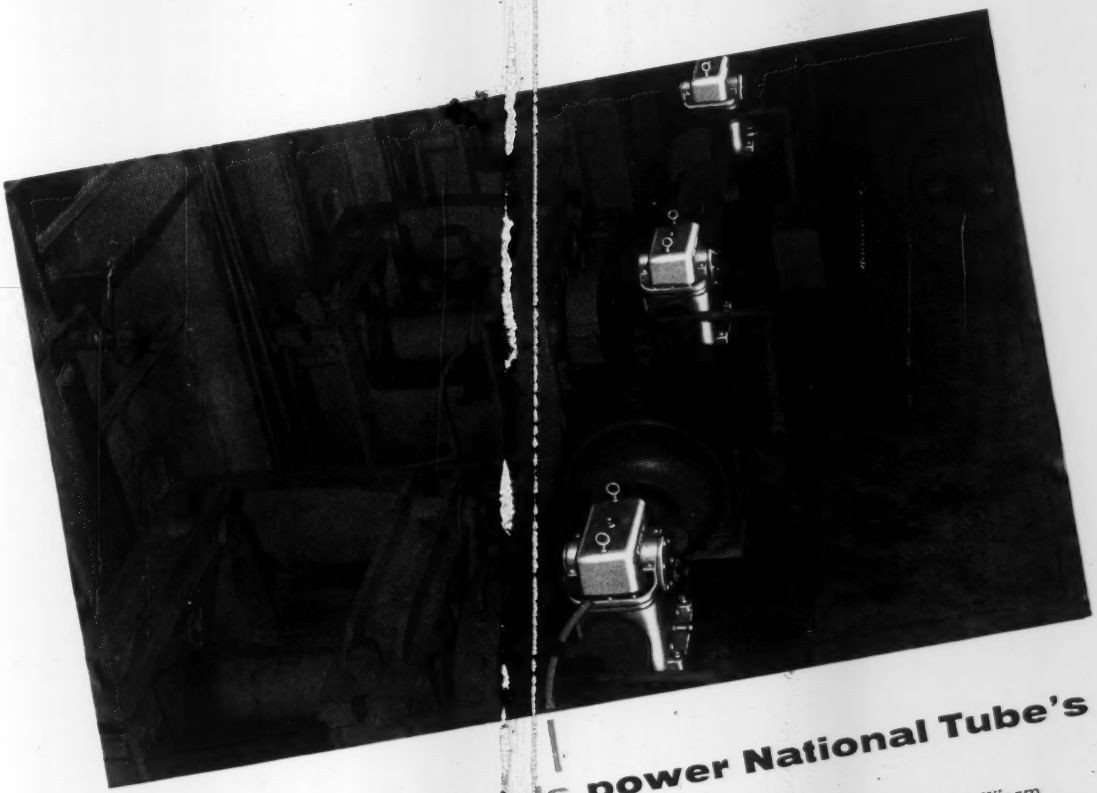
The Rotary Forge, only one of its type in the United States, shapes parts by synchronized blows of four hammers, each striking up to 600 times a minute. Tapered steel truck axles, for example, are produced to accurate dimension in 25 seconds. Because dies are comparatively inexpensive, orders in moderate volume can be filled at lowered costs.

High pressure gas cylinders, jet nozzles, venturis and other precision components for transportation, oil, electric motor and other industries can be forged to your order by this new CURMET process.

FOR FULL INFORMATION, WRITE TO:

METALS PROCESSING DIVISION
760 Northland Avenue

CURTISS-WRIGHT CORPORATION
Buffalo 15, New York



8 coordinated Clevelands power National Tube's unusual tempering furnace

A total of 8 coordinated Cleveland Worm Gear speed reducers work in harmony to transmit power on National Tube's tempering furnace at McKeesport, Pa. Vital to their Warm Working Process, it heats pipe 900-1000° prior to entering the sizing mill.

Operating from a single power source these Cleveland right-angle drives handle the huge job of power transmission required to keep pipe production at high output rates.

That's a big reason why compact, rugged Cleveland Worm Gear drives are found in plants across the country where heavy-duty drives of proven dependability are required.

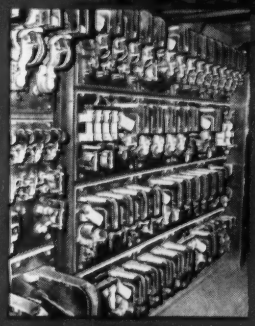
Cleveland's new Bulletin 145 gives the latest specifications on the entire line of speed reducers. Write for your copy today.
The Cleveland Worm & Gear Company,
3270 East 80th Street, Cleveland 4, Ohio.

CLEVELAND
Worm Gear
Speed Reducers

Affiliate: The Farval Corporation,
Centralized Systems of Lubrication.
In Canada: Peacock Brothers Limited.

From iron ore to iron

Cutler-Hammer Control sets the pace at USS Fairless Works



At the ore docks—

Cutler-Hammer Constant Voltage D-c Control directs and protects the operation of the two mammoth ore unloaders and the two ore bridges. Here Cutler-Hammer applied the exclusive Wilson Ritchie emergency dynamic braking control, "Speed-Distance" and zone protection, and bucket protection against overhoisting and excessive cable pay-off.

At the sintering plant—

The highly efficient operation of the Fairless Works sintering plant is a result of the combined engineering talents of Arthur G. McKee, U. S. Steel, and Cutler-Hammer. Cutler-Hammer Unitrol® centralizes the A-c auxiliary controls, and the Magnetic Amplifier Type D-c Adjustable Voltage Drives coordinate the operation of the conveyor type tables, feeders, pug mill, balling drums, and sintering machine.

At the blast furnace—

The new automatic blast furnace charging system is another joint development of Arthur G. McKee and Cutler-Hammer. This revolutionary system completely integrates the proper proportioning and charging of the furnace to follow a pre-selected schedule. Extensive use of visual signals provides a continuous check on the position of the skip cars, number of load on the small and large bells, stock rod position, top temperature and pressure.

These installations of Cutler-Hammer Mill Control quickly demonstrate the very broad experience and engineering knowledge available to you in the solution of your mill control problems. Write today describing your particular requirements . . . your letter will receive prompt attention. Dept. S213, Cutler-Hammer Inc., Milwaukee 1, Wisconsin.

CUTLER-HAMMER CONTROL C-11

Look to Cutler-Hammer mill experience . . . as broad as it is long

CUTLER-HAMMER

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